Service Guide

Model SR785
Dynamic Signal Analyzer

Stanford Research Systems

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Certification

Stanford Research Systems certifies that this product met its published specifications at the time of shipment. Stanford Research Systems further certifies that its calibration measurements are traceable to the United States National Institute of Standards and Technology (NIST).

Warranty

This Stanford Research Systems product is warranted against defects in materials and workmanship for a period of one (1) year from the date of shipment.

Service

For warranty service or repair, this product must be returned to a Stanford Research Systems authorized service facility. Contact Stanford Research Systems or an authorized representative before returning this product for repair.

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Safety and Preparation For Use

WARNING!

Dangerous voltages, capable of causing injury or death, are present in this instrument. Use extreme caution whenever the instrument cover is removed. Do not remove the cover while the unit is plugged into a live outlet.

Caution

This instrument may be damaged if operated with the LINE VOLTAGE SELECTOR set for the wrong AC line voltage or if the wrong fuse is installed.

Line Voltage Selection

The SR785 operates from a 100V, 120V, 220V, or 240V nominal AC power source having a line frequency of 50 or 60 Hz. Before connecting the power cord to a power source, verify that the LINE VOLTAGE SELECTOR card, located in the rear panel fuse holder, is set so that the correct AC input voltage value is visible.

Conversion to other AC input voltages requires a change in the fuse holder voltage card position and fuse value. Disconnect the power cord, open the fuse holder cover door and rotate the fuse-pull lever to remove the fuse. Remove the small printed circuit board and select the operating voltage by orienting the printed circuit board so that the desired voltage is visible when pushed firmly into its slot. Rotate the fuse-pull lever back into its normal position and insert the correct fuse into the fuse holder.

Line Fuse

Verify that the correct line fuse is installed before connecting the line cord. For 100V/120V, use a 1.5 Amp fuse. For 220V/240V, use a 3/4 Amp fuse.

Line Cord

The SR785 has a detachable, three-wire power cord for connection to the power source and to a protective ground. The exposed metal parts of the instrument are connected to the outlet ground to protect against electrical shock. Always use an outlet which has a properly connected protective ground.

Service

Do not attempt to service or adjust this instrument unless another person, capable of providing first aid or resuscitation, is present.

Do not install substitute parts or perform any unauthorized modifications to this instrument. Contact the factory for instructions on how to return the instrument for authorized service and adjustment.

Fan

The fans in the SR785 are required to maintain proper operation. Do not block the vents in the chassis or the unit may not operate properly.

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Chapter 1

Performance Tests

The performance tests described in this section are designed to verify with a high degree of confidence that the unit is performing within the specifications.

The results of each test should be recorded on the test sheet at the end of this section.

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Getting Ready

[Hardkeys]

The keypad consists of four groups of hardkeys (keys with printed labels).

Hardkeys are referenced in braces like [Active Display] or [Input].

The ENTRY keys are used to enter numeric parameters which have been highlighted by a soft key. The MENU keys select a menu of soft keys. Pressing a menu key will change the menu boxes which are displayed next to the soft keys. Each menu presents a group of similar or related parameters and functions. The CONTROL keys start and stop data acquisition, toggle the active display and link parameters and functions. These keys are not in a menu since they are used frequently and within any menu. The FUNCTION keys perform common functions such as Auto Scale and Auto Range. These keys can be accessed at any time.

<Softkeys>

The SR785 has a menu driven user interface. The Menu keys each display a menu of softkeys. The softkeys are at the right of the video display and have different functions depending upon the displayed menu.

Softkeys are referenced in brackets like <Span> or <Units>.

There are three types of softkeys - buttons, lists and numeric values. A button performs a function, such as <Full Span>. A list presents a list of choices or options in the entry field (at the top of the screen). Use the knob to make a selection and press [Enter]. <Measurement> is an example of a list. A numeric value presents the current value in the entry field and awaits numeric entry. Enter a new value with the entry keys and press [Enter]. <Start Freq> is an example of a numeric value.

Knob

The knob normally moves the markers within the displays. If a parameter has been highlighted by its softkey, the knob adjusts the parameter. List parameters are most easily modified with the knob. Numeric parameters may also be adjusted with the knob.

Knob list selections are referenced in parenthesis like (Hanning).

Reset

Throughout this section, it will be necessary to reset the analyzer into a known default state. To do this, press [System] to display the System menu and then press <Preset> and [Enter] to confirm. The unit will perform power up tests and then assume the default settings. Each test generally starts with a reset.

Serial Number

If you need to contact Stanford Research Systems, please have the serial number of your unit available. The serial number is printed on a label affixed to the rear panel. The serial number is also displayed on the screen when the unit is powered on.

Firmware Revision

The firmware revision code is displayed on the screen when the unit is powered on.

Necessary Equipment

The following equipment is necessary to complete the performance tests. The suggested equipment or its equivalent should be used.

Frequency Synthesizer

Freq Range	1 Hz to 1 MHz
Freq Accuracy	better than 5 ppm
Amplitude Accuracy	0.2 dB from 1 Hz to 100 kHz
Harmonic Distortion	≤ -65 dBc
Spurious	≤-55 dBc
Recommended	SRS DS345

AC Calibrator

Freq Range	10 Hz to 100 kHz
Amplitude	1 mV to 10 V
Accuracy	0.1%
External phase locking capability	
Recommended	Fluke 5200A

Feedthrough Terminations

Impedance	50 Ω

Warm Up

The analyzer should be turned on and allowed to warm up for at least an hour before any tests are performed. The self test does not require any warm up period.

It is necessary to turn the unit off and on to reset it. As long as the unit is powered within a minute, this will not affect the test results.

Auto Offset must be left enabled (On) in the [Input] <More> menu. Disabling Auto Offset may invalidate the results of some tests.

The Test Record

Make a copy of the SR785 Performance Test Record at the end of this section. Fill in the results of the tests on this record. This record will allow you to determine whether the tests pass or fail and also preserve a record of the tests.

If A Test Fails

If a test fails, you should check the settings and connections of any external equipment and, if possible, verify its operation using a DVM, scope or some other piece of test equipment.

After checking the setup, repeat the test from the beginning to make sure that the test was performed correctly.

If the test continues to fail, contact Stanford Research Systems for further instructions. Make sure that you have the unit serial number and firmware revision code handy. Have the test record on hand as well.

1. Self Tests

The self tests check the analyzer hardware. These are functional tests and do not relate to the specifications. These tests should be run before any of the performance tests.

Note that the Test menu offers more tests than are required here. Only those tests, which require no additional equipment, are discussed in this section. The computer interface and disk drive tests are not required but should be periodically checked. See the System menu for more information about those tests.

Setup

No external setup is required for this test.

Procedure

1) Reset the unit by pressing [System] <Preset> and then [Enter] to confirm.
   During re-boot, the DSP memory and calibration tests should all be OK.
   To review this power on screen, use [System] <Show Version>.

2) Press the keys in the following sequence:

[System]
<Diagnostics>
<Keypad Test>
Press all of the front panel keys until all of the boxes are filled in.
Then press any key to exit this screen.

<Knob Test>
Rotate the knob to verify rotation and direction.
<Return>

<Memory >
<System RAM>
<Begin>
All of the system memory chips should Pass.
<Return>

<System ROM>
<Begin>
All of the system memory chips should Pass.
<Return>

<Video RAM>
<Begin>
All of the video memory chips should Pass.
<Return>

<Help ROM>
<Begin>
All of the memory chips should Pass.
<Return>

<Return>

3) This completes the functional hardware tests. Enter the results of this test in the test record at the end of this section.

2. DC Offset

This test measures the DC offset of the input.

Setup

Connect a 50Ω feedthrough termination to the Ch1 A and Ch2 A inputs. This shorts the inputs so the analyzer's own DC offset will be measured.

Procedure

1) Reset the unit by pressing [System] <Preset> and then [Enter] to confirm.

2) Press the keys in the following sequence:

[Freq]
<Span>
[1] [.] [6] select (kHz) [Enter]

[Marker]
<Marker>
Select (Link) [Enter]
Use the knob to move the markers to 0 Hz.

[Average]
<Averaging Type>
Select (Linear/Fixed Length) [Enter]
<# Avgs>
[1] [0] [Enter]
<Display Average>
Select (RMS) [Enter]

3) a) Press
[Input]
<Input Configuration>
<Ch1 Input Range>
<Channel>
Select (Both) [Enter]
<Ch1 Input Range>
[-] [3] [0] [Enter]
[Start/Reset]
Wait for the average to finish.
[Auto Scale A]
[Auto Scale B]

b) Record the marker Y values for both displays on the -30 dBV range.

c) Press
<Ch1 Input Range>

[-] [5] [0] [Enter]

[Start/Reset]
Wait for the average to finish.
[Auto Scale A]
[Auto Scale B]

d) Record the marker Y values for both displays for the -50 dBV range.

4) This completes the DC measurement test. Enter the results of this test in the test record at the end of this section.

3. Common Mode Rejection

This test measures the common mode rejection of the analyzer inputs.

Setup

We will use the frequency synthesizer to provide the signal.

Connect the frequency synthesizer output to both the Ch1 A and Ch1 B inputs of the analyzer. Use equal length cables from A and B to a BNC TEE. Connect the cable from the synthesizer output to the TEE.

Procedure

1) Reset the unit by pressing [System] <Preset> and then [Enter] to confirm.

2) Set the frequency synthesizer to a frequency of 1 kHz and an amplitude of 500 mVrms.

3) Setup the measurement. Press the keys in the following sequence:

[Freq]
<Span>
[1] [.] [6] Select (kHz) [Enter]
<Center Freq.>
[1] Select (kHz) [Enter]

[Input]
<Input Config>
<Ch1 Input Range>
[-] [2] [Enter]

[Average]
<Averaging Type>
Select (Linear/Fixed Len) [Enter]
<# Avgs>
[1] [0] [Enter]
<Display Avg>
Select (RMS) [Enter]
Wait for the average to finish.

[Auto Scale A]
[Marker Max]
[Marker Ref]

[Input]
<Input Config>
<Ch1 Input Mode>
Select (A-B) [Enter]

[Start/Reset]
Wait for the average to finish.

4) Record the marker Y reading. This is the Ch1 CMRR (in dB) at 1 kHz.

5) Move the input cables from Ch1 A and B to Ch2 A and B.
Repeat the measurement for Ch2.
Press the keys in the following sequence:

[Active Display]
Make DisplayB the active display.

[Input]
· Channel ·
Select (Ch2) [Enter]
<Ch2 Input Range>
[-] [2] [Enter]

[Start/Reset]
Wait for the average to finish.

[Auto Scale B]
[Marker Max]
[Marker Ref]

[Input]
<Input Config>
<Ch2 Input Mode>
Select (A-B) [Enter]

[Start/Reset]
Wait for the average to finish.

6) Record the marker Y reading. This is the Ch2 CMRR (in dB) at 1 kHz.

7) This completes the CMRR measurement test. Enter the results of this test in the test record at the end of this section.

4. Amplitude Accuracy and Flatness

This test measures the input amplitude accuracy and frequency response.

Setup

We will use the frequency synthesizer to provide an accurate frequency and the AC calibrator to provide a sine wave with an exact amplitude.

Connect the output of the frequency synthesizer to the phase lock input of the calibrator. Connect the output of the AC calibrator to the Ch1 A and Ch2 A inputs of the analyzer. Be sure to use the appropriate terminations where required.

Set the Synthesizer to:

Function	Sine
Frequency	1.0 kHz
Amplitude	0.5 Vrms
Offset	off or 0V
Sweep	off
Modulation	none

Set the AC Calibrator to:

Frequency	1.0 kHz
Amplitude	0.707 mVrms
Voltage	Off
Phase Lock	On
Sense	Internal

Procedure

1) Reset the unit by pressing [System] <Preset> and then [Enter] to confirm.

2) Press the keys in the following sequence:

[Window]
<Window>
Select (Flattop) [Enter]

[Freq]
<Span>
[1] [.] [6] Select (kHz) [Enter]
<Center Freq.>
[1] Select (kHz) [Enter]

[Input]
<Input Config>
<Channel>
Select (Both) [Enter]
<Ch1 Coupling>
Select (AC) [Enter]
[Average]
<Averaging Type>
Select (Linear/Fix Len) [Enter]
<# Avgs>
[1] [0] [Enter]
<Display Avg>
Select (RMS) [Enter]

3) Amplitude accuracy is verified at 1.0 kHz and various input ranges. For each range setting in the table below, perform steps 3a through 3d.

Input Range (pk)	AC Calibrator Amplitude
-46 dBV	2.509 mVrms
-38 dBV	6.302 mVrms
-30 dBV	15.830 mVrms
-14 dBV	99.881 mVrms
4 dBV	0.7934 Vrms
10 dBV	1.5830 Vrms
22 dBV	6.3021 Vrms
34 dBV	25.089 Vrms

a) Set the AC calibrator to the amplitude shown in the table.

b) Press
[Input]
<Ch1 Input Range>
Enter the range from the table.

c) Press
[Start/Reset]
Wait for the average to finish.
[Auto Scale A]
[Auto Scale B]

[Link] [Marker Max]

d) Record the marker Y reading for both displays for each range.

4) Frequency response is checked at frequencies above 1 kHz. The test frequencies are listed below. The measurements are performed for two different input ranges.

Test Frequencies
24 kHz
48 kHz
72 kHz
96 kHz

a) Set the AC calibrator to 1.0 kHz and an amplitude of 99.881 mVrms.

b) Set the frequency synthesizer to 1.0 kHz.

c) Press
[Frequency]
<Center Frequency.>
[1] Select (kHz) [Enter]

[Input]
<Ch1 Input Range>
[-] [1] [4] [Enter]
[Start/Reset]
Wait for the average to finish.
[Auto Scale A]
[Auto Scale B]

[Link] [Marker Max]
The Y value of the markers should both read -17.0 dB (± 0.15 dB).

d) Set the AC calibrator and frequency synthesizer to the frequency in the table.

e) Press
[Frequency]
<Center Freq.>
Enter the signal frequency.

[Start/Reset]
Wait for the average to settle.

[Link] [Marker Max]

f) Record the marker Y reading for both displays. Repeat steps 4d and 4e for all of the frequencies listed.

5) Now repeat the frequency response measurements at a different input range.

a) Set the AC calibrator to 1 kHz and an amplitude of 6.3021 Vrms.

b) Set the frequency synthesizer to 1 kHz.

c) Press
[Freq]
<Center Freq..>
[1] <kHz>

[Input]
<Ch1 Input Range>
[2] [2] [Enter]

[Start/Reset]
Wait for the average to finish.
[Auto Scale A]
[Auto Scale B]

[Link] [Marker Max]
The Y value of the marker should now read +19.0 dB (±0.15 dB).

d) Repeat steps 4d through 4f above.

6) This completes the amplitude accuracy and frequency response test. Enter the results of this test in the test record at the end of this section.

5. Amplitude Linearity

This test measures the amplitude linearity. This tests how accurately the analyzer measures a signal smaller than full scale.

Setup

We will use the frequency synthesizer to provide an accurate frequency and the AC calibrator to provide a sine wave with an exact amplitude.

Connect the output of the frequency synthesizer to the phase lock input of the calibrator. Connect the output of the AC calibrator to the Ch1 A and Ch2 A inputs of the analyzer. Be sure to use the appropriate terminations where required.

Set the Synthesizer to:

Function	Sine
Frequency	1.0 kHz
Amplitude	0.5 Vrms
Offset	off or 0V
Sweep	off
Modulation	none

Set the AC Calibrator to:

Frequency	1.0 kHz
Amplitude	6.3021 Vrms
Voltage	Off
Phase Lock	On
Sense	Internal

Procedure

1) Reset the unit by pressing [System] <Preset> and then [Enter] to confirm.

2) Press the keys in the following sequence:

[Window]
<Window>
Select (Flattop) [Enter]

[Freq]
<Span>
[1] [.] [6] Select (kHz) [Enter]
<Center Freq.>
[1] Select (kHz) [Enter]

[Input]
<Input Config>
<Channel>
Select (Both) [Enter]
<Ch1 Coupling>
Select (AC) [Enter]
<Ch1 Input Range>
[2] [2] [Enter]

[Average]
<Averaging Type>
Select (Linear/Fix Len) [Enter]
<# Avgs>
[1] [0] [Enter]
<Display Aveg>
Select (RMS) [Enter]

[Start/Reset]
Wait for the average to finish.
[Auto Scale A]
[Auto Scale B]

[Link] [Marker Max]

3) For each of the amplitudes listed below, perform steps 3a through 3c.

AC Calibrator Amplitudes
6.3021 Vrms
1.1207 Vrms
141.09 mVrms
22.361 mVrms
3.544 mVrms

a) Set the AC calibrator to the amplitude in the table.

b) Press [Start/Reset] and wait for the average to finish.

c) Record the marker Y reading for both displays.

4) This completes the amplitude linearity test. Enter the results of this test in the test record at the end of this section.

6. Anti-alias Filter Attenuation

This test measures the attenuation of the anti-alias filters. This tests how well the analyzer rejects frequencies outside the 102.4 kHz frequency range.

Setup

We will use the frequency synthesizer to provide the signal.

Connect the output of the frequency synthesizer to the Ch1 A and Ch2 A inputs of the analyzer. Be sure to use the appropriate terminations where required.

Procedure

1) Reset the unit by pressing [System] <Preset> and then [Enter] to confirm.

2) Set the frequency synthesizer to a frequency of 160.144 kHz and an amplitude of 500 mVrms.

3) Press the keys in the following sequence:

[Freq]
<Span>
[8] [0] [0] Select (Hz) [Enter]
<Center Freq.>
[1] [0] [2] Select (kHz) [Enter]

[Input]
<Input Config>
<Channel>
Select (Both) [Enter]
<Ch1 AA Filter>
Select (Off) [Enter]

[Average]
<Averaging Type>
Select (Linear/Fix Len) [Enter]
<# Avgs>
[1] [0] [Enter]
<Display Avg>
Select On [Enter]

[Start/Reset]
Wait for the average to finish.
[Auto Scale A]
[Auto Scale B]

[Link] [Marker Max]
[Link] [Marker Ref]
This references the un-filtered out of band signal at 160.144 kHz aliased to 102.0 kHz.

4) Measure the anti-alias filter attenuation. Press
[Input]
<Input Config>
<Channel>
Select (Both) [Enter]
<Ch1 AA Filter>
Select (On) [Enter]
[Start/Reset]
Wait for the average to finish.

Record the marker Y readings for both displays.

5) This completes the anti-alias filter attenuation test. Enter the results of this test in the test record at the end of this section.

7. Frequency Accuracy

This test measures the frequency accuracy of the analyzer. This tests the accuracy of the fundamental crystal timebase inside the unit.

Setup

We will use the frequency synthesizer to provide the signal.

Connect the output of the frequency synthesizer to the Ch1 A input of the analyzer. Be sure to use the appropriate terminations where required.

Procedure

1) Reset the unit by pressing [System] <Preset> and then [Enter] to confirm.

2) Set the frequency synthesizer to a frequency of 96.000 kHz and an amplitude of 500 mVrms.

3) Press the keys in the following sequence:

    [Freq]
        <Span>
            [2] [0] [0] Select (Hz) [Enter]
        <Center Freq.>
            [9] [6] Select (kHz) [Enter]
    [Start/Reset]

    [Auto Scale A]

    [Marker Max]

4) Wait for the spectrum to settle (at least 5 seconds), then record the marker frequency reading for DisplayA.

5) This completes the frequency accuracy test. Enter the results of this test in the test record at the end of this section.

8. Phase Accuracy

This test measures the phase accuracy of the analyzer. This test measures the phase of a signal relative to the trigger.

Setup

We will use the frequency synthesizer to provide the signal.

Connect the output of the frequency synthesizer to the Trigger, Ch1 A and Ch2 A inputs of the analyzer. Be sure to use the appropriate terminations where required.

Procedure

1) Reset the unit by pressing [System] <Preset> and then [Enter] to confirm.

2) Set the frequency synthesizer to a frequency of 10.240 kHz and an amplitude of 500 mVrms.

3) Press the keys in the following sequence:

[Input]
    <Input Config>
        <Channel>
            Select (Both) [Enter]
        <Ch1 Input Range>
            [-] [2] <dBV>
        <Ch1 Coupling>
            Select (AC) [Enter]

[Trigger]
    <Trigger Source>
        Select (Ch1) [Enter]
[Auto Scale A]
[Auto Scale B]

[Marker]
    <Marker>
        Select (Link) [Enter]

[Marker Max]

[Display Setup]
    <View>
        Select (Phase) [Enter]

[Active Display]
    Make DisplayB the active display.

[Display Setup]
<View>
Select (Phase) [Enter]

[Auto Scale A]
[Auto Scale B]

[Average]
<# Avgs>
[1] [0] [Enter]
<Display Avg>
Select (Vector) [Enter]
<Averaging Type>
Select (Linear) [Enter]

4) Record the marker Y readings for both displays. (Make sure that the marker frequency is 10.24 kHz)

5) This completes the phase accuracy test. Enter the results of this test in the test record at the end of this section.

9. Noise and Spurious Signals

This test measures the analyzer noise floor and checks for spurious signals.

Setup

Connect 50Ω feedthrough terminations to the Ch1 A and Ch2 A inputs. This grounds the inputs so the analyzer's input noise is measured.

Procedure

1) Reset the unit by pressing [System] <Preset> and then [Enter] to confirm.

2) Press the keys in the following sequence:

[Freq]
<Span>
[5] [1] [.] [2] Select (kHz) [Enter]
<Start Freq.>
[5] [1] [2] Select (Hz) [Enter]

[Window]
<Window>
Select (Hanning) [Enter]

[Input]
<Input Config>
<Channel>
Select (Both) [Enter]
<Ch1 Input Range>
[-] [5] [0] [Enter]
<Ch1 Coupling>
Select (AC) [Enter]
<Ch1 Grounding>
Select (Ground) [Enter]

[Display Options]
<Units>
<PSD Units>
[Link] Select (On) [Enter]
<Pk. Units>
[Link] Select (rms) [Enter]

[Display Setup]
<Y mid>
[Link] [-] [1] [5] [0] [Enter]

[Average]
<# Avgs>
[2] [0] [Enter]
<Averaging Type>
Select (Linear/Fix Len) [Enter]
<Display Avg>
Select (RMS) [Enter]

[Marker]
<Width>
[Link] Select (Wide) [Enter]
<Seeks>
[Link] Select (Mean) [Enter]

[Start/Reset]
Wait for the average to finish.

[Link] [Marker Max]

3) Record the marker Y readings for both displays.

4) Press
[Freq]
<Start Freq.>
[5] [1] [.] [2] Select (kHz) [Enter]

[Start/Reset]
Wait for the average to finish.

[Link] [Marker Max]

5) Record the marker Y readings for both displays.

6) Press
[Display Options]

[Display Setup]
<Units>
<Pk. Units>
Select (pk) [Enter]
<PSD Units>
Select (Off) [Enter]

[Marker]
<Seeks>
Select (Max) [Enter]

7) For each of the spans listed below, perform steps 7a through 7c.

Center Frequency	Span
230 Hz	400 Hz
500 Hz	400 Hz
1 kHz	1.6 kHz
5 kHz	1.6 kHz
10 kHz	1.6 kHz
25 kHz	1.6 kHz
50 kHz	1.6 kHz
75 kHz	1.6 kHz
101 kHz	1.6 kHz

a) Press
[Freq]
<Span>
Enter the span from the table
<Center Freq.>
Enter the center frequency from the table
[Start/Reset]

b) Wait for the average to finish (20 averages).
[Link] [Marker Max]

c) Record the marker Y readings for both displays.

8) This completes the noise and spurious signal test. Enter the results of this test in the test record at the end of this section.

10. Sine Source

This test measures the source sine output.

Setup

Connect the Source output to the Ch1 A input.

Procedure

1) Reset the unit by pressing [System] <Preset> and then [Enter] to confirm.

2) Press the keys in the following sequence:

    [Source]
        <Amplitude 1>
            [1] [0] [0] [0] [Enter]
    [On]

    [Auto Range Ch1] and wait until the range stops changing.

    [Auto Scale A]

    [Marker Max]

3) Record the marker Y reading for DisplayA.

4) Press
        <Amplitude 1>
            [1] [0] [0] [Enter]

5) Record the marker Y reading for DisplayA.

6) Press
        <Amplitude 1>
            [1] [0] [Enter]

7) Record the marker Y reading for DisplayA.

8) Press
        <Amplitude 1>
            [1] [0] [0] [0] [Enter]

9) For each of the frequencies below, perform steps 9a and 9b.

Frequency
20.48 kHz
40.96 kHz
61.44 kHz
81.92 kHz
99.072 kHz

a) Press
<Frequency 1>
Enter the frequency from the table.

[Marker Max]

b) Record the marker Y reading for DisplayA.

8) This completes the source sine test. Enter the results of this test in the test record.

11. Harmonic Distortion

This test measures the harmonic distortion of the analyzer source and inputs.

Setup

Connect the source output to the Ch1 A and Ch2 A inputs of the analyzer.

Procedure

1) Reset the unit by pressing [System] <Preset> and then [Enter] to confirm.
   This sets the source to sine output at 10.24 kHz and 500 mVpk amplitude.

2) Press the keys in the following sequence:
   [Source]
   <On>
   [Input]
   <Input Config>
   <Channel>
   Select (Both) [Enter]
   <Ch1 Input Range>
   [-] [4] [Enter]
   [Auto Scale A]
   [Auto Scale B]

   [Average]
   <# Avgs>
   [2] [5] [Enter]
   <Display Average>
   Select (Vector) [Enter]
   [Marker]
   <Mode>
   [Link] Select (Harmonic) [Enter]
   <# Harmonics>
   [Link] [5] [Enter]

   [Link] [Marker Max]

3) Record the THD reading for DisplayA (from the THD menu box).

4) Press
   [Active Display]
   Make DisplayB the active display.

5) Record the THD reading for DisplayB (from the THD menu box).

6) This completes the harmonic distortion test. Enter the results of this test in the test record at the end of this section.

SR785 Performance Test Record

Serial Number _____ Tested By _____
Firmware Revision _____ Date _____

Equipment Used _____

1. Self Tests

Test	Pass	Fail
Power On Test	____	____
Keypad	____	____
Knob	____	____
System RAM	____	____
System ROM	____	____
Video RAM	____	____
Help ROM	____	____

2. DC Offset

Input Range	DispA (Ch1)	DispB (Ch2)	Upper Limit
-30 dBV	_____	_____	< -80 dBV
-50 dBV	_____	_____	< -80 dBV

3. Common Mode Rejection

Input Range	Frequency	DispA (Ch1)	DispB (Ch2)	Upper Limit
-2 dBV	1.0 kHz	_____	_____	< -90 dB

4. Amplitude Accuracy and Flatness

Input Range	Calibrator Ampl.	Lower Limit	DispA (Ch1)	DispB (Ch2)	Upper Limit
-46 dBV	2.509 mVrms	-49.20 dBV	_____	_____	-48.80 dBV
-38 dBV	6.302 mVrms	-41.20 dBV	_____	_____	-40.80 dBV
-30 dBV	15.830 mVrms	-33.20 dBV	_____	_____	-32.80 dBV
-14 dBV	99.881 mVrms	-17.20 dBV	_____	_____	-16.80 dBV
4 dBV	0.7934 Vrms	0.80 dBV	_____	_____	1.20 dBV
10 dBV	1.5830 Vrms	6.80 dBV	_____	_____	7.20 dBV
22 dBV	6.3021 Vrms	18.80 dBV	_____	_____	19.20 dBV
34 dBV	25.089 Vrms	30.80 dBV	_____	_____	31.20 dBV

Flatness relative to 1 kHz

Input Range	Frequency	Lower Limit	DispA (Ch1)	DispB (Ch2)	Upper Limit
-14 dBV	24 kHz	-17.20 dBV	_____	_____	-16.80 dBV
-14 dBV	48 kHz	-17.20 dBV	_____	_____	-16.80 dBV
-14 dBV	76 kHz	-17.20 dBV	_____	_____	-16.80 dBV
-14 dBV	99 kHz	-17.20 dBV	_____	_____	-16.80 dBV

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4. Amplitude Accuracy and Flatness (Continued)

Flatness relative to 1 kHz

Input Range	Frequency	Lower Limit	DispA (Ch1)	DispB (Ch2)	Upper Limit
22 dBV	24 kHz	18.80 dBV	_____	_____	19.20 dBV
22 dBV	48 kHz	18.80 dBV	_____	_____	19.20 dBV
22 dBV	72 kHz	18.80 dBV	_____	_____	19.20 dBV
22 dBV	96 kHz	18.80 dBV	_____	_____	19.20 dBV

5. Amplitude Linearity

Input Range	Calibrator Ampl.	Lower Limit	DispA (Ch1)	DispB (Ch2)	Upper Limit
22 dBV	6.3021 Vrms	18.80 dBV	_____	_____	19.20 dBV
	1.1207 Vrms	3.80 dBV	_____	_____	4.20 dBV
	141.09 mVrms	-14.20 dBV	_____	_____	-13.80 dBV
	22.361 mVrms	-30.20 dBV	_____	_____	-29.80 dBV
	3.544 mVrms	-46.20 dBV	_____	_____	-45.80 dBV

6. Anti-Alias Filter Attenuation

Input Frequency	DispA (Ch1)	DispB (Ch2)	Upper Limit
160.144 kHz	_____	_____	< -90 dB

7. Frequency Accuracy

Input Frequency	Lower Limit	DispA	Upper Limit
96.000 kHz	95.9976 kHz	_____	96.0024 kHz

8. Phase Accuracy

Frequency	Trigger Source	Lower Limit	DispA (Ch1)	DispB (Ch2)	Upper Limit
10.24 kHz	Ch1	-93.0 deg	_____	_____	-87.0 deg

9. Noise and Spurious Signals

Noise floor

Start Frequency	Span	DispA (Ch1)	DispB (Ch2)	Upper Limit
512 Hz	51.2 kHz	_____	_____	-160 dBVrms/√Hz
51.2 kHz	51.2 kHz	_____	_____	-160 dBVrms/√Hz

Spurious signals

Center Frequency	Span	DispA (Ch1)	DispB (Ch2)	Upper Limit
230 Hz	400 Hz	_____	_____	-135 dBVpk
500 Hz	400 Hz	_____	_____	-140 dBVpk
1 kHz	1.6 kHz	_____	_____	-140 dBVpk
5 kHz	1.6 kHz	_____	_____	-140 dBVpk
10 kHz	1.6 kHz	_____	_____	-140 dBVpk
25 kHz	1.6 kHz	_____	_____	-140 dBVpk
50 kHz	1.6 kHz	_____	_____	-140 dBVpk
75 kHz	1.6 kHz	_____	_____	-140 dBVpk
101 kHz	1.6 kHz	_____	_____	-140 dBVpk

SR785 Performance Test Record

10. Sine Source

Amplitude

Frequency	Level	Lower Limit	DispA	Upper Limit
1 kHz	1000 mV	-0.3 dBV	_____	0.3 dBV
1 kHz	100 mV	-20.3 dBV	_____	-19.7 dBV
1 kHz	10 mV	-40.3 dBV	_____	-39.7 dBV

Amplitude Flatness

Frequency	Level	Lower Limit	DispA	Upper Limit
20.48 kHz	1000 mV	-0.3 dBV	_____	0.3 dBV
40.96 kHz	1000 mV	-0.3 dBV	_____	0.3 dBV
61.44 kHz	1000 mV	-0.3 dBV	_____	0.3 dBV
81.92 kHz	1000 mV	-0.3 dBV	_____	0.3 dBV
99.072 kHz	1000 mV	-0.3 dBV	_____	0.3 dBV

11. Harmonic Distortion

Fundamental	DispA THD	DispB THD	Upper Limit
10.24 kHz	_____	_____	-80 dB

Chapter 2

Circuit Description

This chapter provides descriptions of the circuitry in the SR785. Each circuit board's function and operation is discussed. The schematics for each board are shown in Chapter 5.

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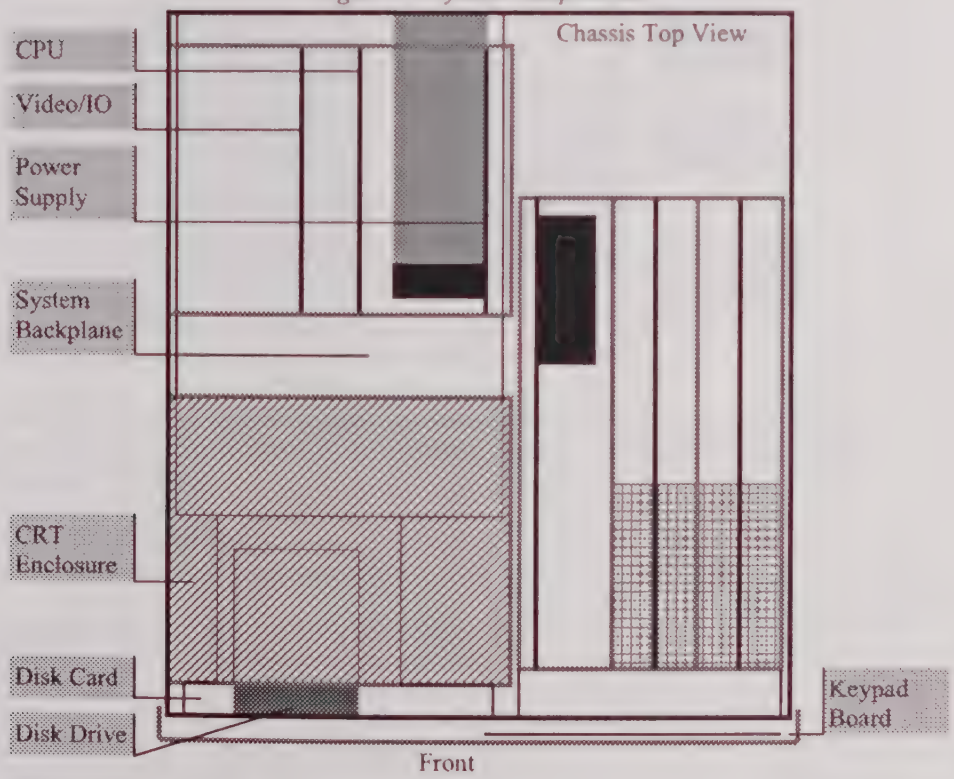
Overview

The SR785's circuitry is divided into two major sections - the *system section* and the *analyzer section*. The system section contains the main processor (CPU), video display, external interfaces, power supply and front panel. The analyzer section contains the digital signal processor (DSP), source output and analog inputs.

System Components

The system section components are located in the left half of the chassis, behind and below the CRT (video display). The card cage behind the CRT contains the power supply, main CPU card and the video/IO card. The cards are interconnected by a backplane board under the card cage. The disk drive is mounted to a small board beneath the CRT. This card can be removed from the front. The keypad connects to the disk board at the front of the chassis.

Figure 7-1 System Components

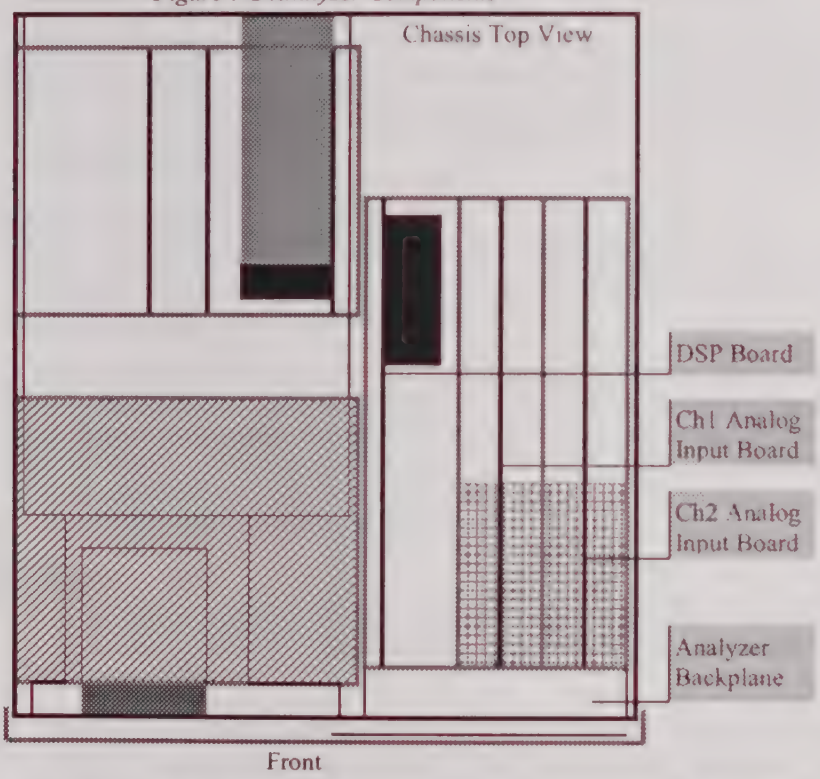


Analyzer Components

The analyzer section is in the right half of the chassis, directly behind the keypad. A card cage contains the DSP board and two identical analog input boards. The analyzer boards are interconnected by a backplane board under the card cage. This backplane extends all

the way to the front panel BNC connectors. The analyzer backplane connects to the system backplane via two short cables at the center of the chassis just behind the CRT.

Figure 7-2 Analyzer Components



Both the system and the analyzer backplanes are passive and contain no active circuitry. They only provide power distribution, signal routing between the various boards and to external ports or devices.

Schematic Diagram Locations

Schematic diagrams are located in Chapter 5.

Board/Assembly	Schematic #'s (see Chapter 5)
CPU Board	MCPU-1 through MCPU-9
Video/IO Board	MVID-10 through MVID-14
Power Supply	MPWR-1 through MPWR-2
System Backplane	MBKPL-20 through MBKPL-23
Disk Card	MBKPL-24
Keypad Board	MKEY-1
DSP Board	D785-1 through D785-11
Analog Input Boards	A780-1 through A780-7
Analyzer Backplane	M780-1 through M780-4

CPU Board

This section covers schematics MCPU-1 through MCPU-9 in Chapter 5.

The CPU board contains the main microprocessor system. CPU memory, front panel and printer interfaces are on this board. Two off-board data buses are also driven from this board. The I/O Expansion data bus connects the CPU board with the Video/IO and Aux slots on the System backplane. The External data bus connects to the DSP Board via the Analyzer backplane.

Microprocessor System

The microprocessor, U101, is an 80C186XL (or 80C186EA) microcontroller which integrates a fast 16 bit processor, counter-timers, interrupt controller, DMA controller, and I/O decoding into a single component.

The 80C186 is clocked at 40.00 MHz by crystal oscillator U103. The external clock period is 2 oscillator cycles or 20.0 MHz. The data and lower 16 bits of address are multiplexed on processor lines AD0-AD15. U201, U202, U203 latch the address A0-A19 at the beginning of each memory or I/O cycle. U204 and U205 are bi-directional data bus drivers which are active during the data read/write portion of each memory or I/O cycle. U201-U205 provide the on-board System bus.

Memory Map

The 80C186 can address 1 Mbyte of memory and 64k of I/O space. The memory is mapped into 5 blocks. Each block has 2 sockets, one for the low byte and one for the high byte of data.

U301-U304 are 128 kbyte EPROMS mapped from 80000H to FFFFFH. EPROMS U305 and U306 are mapped from 50000H to 7FFFFH for a total of 704 kbytes of program ROM.

U401-U404 are 128 kbyte CMOS static RAMs mapped from 00000H to 4FFFFH (320 kbytes). U401 and U402 (256 kbytes) are battery backed up.

I/O Map

U209 and U210 are the data bus drivers for the off-board I/O Expansion bus. U206 and U207 are the data bus drivers for the off-board External (DSP) bus. U208 is the address driver for the External bus.

U213 is a PAL which enables the correct bus drivers depending upon the I/O address space being accessed. All memory accesses and on-board I/O use the System bus.

The 80C186 generates 7 peripheral chip select strobes, each covering 128 byte I/O addresses. -PCS0 enables on-board I/O peripherals (front panel, clock and printer port). -PCS1 enables the peripherals on the Video/IO board. -PCS2 enables the AUX connectors on the System backplane. -PCS1 and -PCS2 enable the Expansion data bus. -PCS4 and -PCS5 enable the External (DSP) bus. -PCS4 enables processor addressable peripherals on the DSP board.

U501 and U503 decode the on-board I/O locations enabled by -PCS0. These are the knob, keypad and keyboard, the clock, the printer port and the system status port.

U508 is a wait state generator. Extra wait states are generated by all I/O accesses. These extra wait states are canceled if the access is to the External bus. The -Video_Rdy signal also ends the wait generation. -Video_Rdy signals that the graphics processor (on the Video/IO board) has acknowledged an IO cycle and is ready.

Interrupts generated by system peripherals (on both the CPU and Video/IO boards) are combined in U505 into a single prioritized interrupt. The highest priority pending interrupt will be encoded on U505's outputs and read via the status port, U608. The UART directly interrupts the processor since it can never be masked.

String ROM

U801 and U802 are 256 kbyte EPROMS containing the on-screen help information. These memories are mapped into the upper 32k of I/O space. One of the sixteen 32k banks is selected by BA15..BA18 set in the system status port. This keeps ROM data from using up program memory space.

Keypad Interface

The keypad is organized as 8 columns and 8 rows of switch closures. The conductive rubber keys provide the switch closures. U607 strobes the columns and U606 detects the switch closure. The diodes D601-D608 prevent one column from affecting another. All of the outputs from U607 are set high and U606 is read periodically by the processor. As long as 00H is read, no key is pressed and the strobes are left on. When a non-zero value is read, then the key strobes are activated individually in order to decode which key is down.

Spin Knob

The knob is an optical encoder buffered by U612. Each transition of its quadrature outputs is clocked into U610 or U611 and generates an interrupt at the output of U507B. The processor keeps track of the knob's direction and speed.

Keyboard Interface

The PC keyboard interface uses U603 to convert serial data from the keyboard into a parallel byte for the processor to read. The data format from the keyboard is a leading start bit followed by 8 data bits. U603 is reset by a processor read. When a key is pressed, the bits are shifted into U603. When the start bit appears at the QH output, 7 bits of the data byte are in U603. U601 is the 9th bit of the shift register. When U601 clocks in the start bit, U601 must have the 8 bits of the data. U601 then latches the serial data in U601 and interrupts the processor.

Only keyboards which operate in the PC or 8088 mode will function with this interface.

Speaker

The speaker is driven by a timer on the 80C186. The timer outputs a square wave which is enabled by U507A and drives the speaker through Q705.

Clock/Calendar

U702 is an MC146818 real time clock chip which keeps track of time and date. The time base is a 32.768 kHz oscillator made by U706. Both U702 and U706 are battery backed up.

Reset/Battery Switch

U701 is the processor supervisor. Power on reset is detected by U701 and signaled to the processor via -Pwr_Reset. In addition, the chip enables to the battery backed-up memory U401 and U402 are protected by U701. Q701 provides normal 5V power to the battery circuits when the power is on.

Printer Interface

The printer interface is a normal Centronics style parallel port. Output data is buffered by U703, an LS octal latch. Output control bits are buffered by the open collector driver U704, and input control bits are discriminated by U705A and U705B.

Expansion Connector

The 120 pin connector carries all of the necessary interconnections to the System backplane. Both the Expansion and External buses are carried off-board via this connector. Power is also delivered through this connector.

Video/IO Board

This section covers schematics MVID-10 through MVID-14 in Chapter 5.

The Video/IO board contains the display generation hardware, the GPIB and RS232 interfaces and the disk controller.

Video Graphics Interface

The video graphics interface is centered around U1003, an HD63484 graphics controller. The HD63484 generates the video sync signals, controls the video memory, draws graphic primitives such as lines, circles, polygons, etc. and performs many memory to memory functions. The HD63484 relieves the 80C186 from having to calculate each video image and greatly increases display speed.

Commands and data are sent from the 80C186 to the HD63484 using a DMA channel. This allows the HD63484 to process commands without having to wait for the 80C186 to send them.

U1006 and U1007 are 128 kbyte RAMs which make up the 256k video memory. Each pixel is made up of 2 bits. The video screen is 800H by 600V and requires 120,000 bytes of memory. The remaining memory is used to store patterns and fonts as well as a second display screen. The data and address are multiplexed and U1004 and U1005 are the address latches.

Memory is accessed twice during each display cycle. The first access reads the 16 bits of video data for the current display cycle. The second access is used by the controller for drawing purposes. During the drawing access, data at any address may be read or written. This allows drawing to take place as fast as possible.

Data is read 16 bits at a time. When data is required for the display, the even data bits are latched into U1008 and the odd data bits are latched into U1009. U1008 and U1009 are parallel to serial converters. The video data is shifted out at 19.59 MHz and synchronized by U1013. U1014A synchronizes the Display_Enable to disable the video data except during active display times.

The display consists of two layers or planes. Data on the front plane appears in front of data on the rear plane. Each pixel requires two bits of information. The even bit is drawn on the front plane and the odd bit is drawn on the rear plane. The even bit disables the odd bit which puts it in front. U1012 handles the layering logic. The display planes make it simple to draw a graph in front of a grid.

The two display planes each have their own display brightness. This gives the display a three dimensional appearance. Current sources Q1101 and Q1102 set the brightness for the front and rear planes. U1101 is a dual DAC which programs the two current sources.

Disk Controller

U1201 is a DP8473 disk controller which integrates all of the functions of the PC disk interface into a single IC. All motor controls, read and write signals, and data are

controlled by the DP8473. A DMA channel is used to send and receive data from the controller in order to satisfy the disk drive timing.

GPIB Interface

The GPIB (IEEE-488) interface is provided by U1202, a TMS9914A controller. U1203 and U1204 buffer data I/O to the GPIB connector. U1202 is programmed to provide an interrupt to the processor whenever there is bus activity addressed to the unit.

RS232 Interface

The SCN2641 UART, U1303, provides all of the UART functions including baud rate generation. Standard baud rates up to 19.2k can be generated from the 3.6864 MHz clock. U1305 buffers the outgoing data and control signals. Incoming signals are received by U1304.

The RS232 port is a DCE and may be connected to a PC using a standard serial cable (not a "null modem" cable).

Expansion Connector

The 120 pin connector carries all of the necessary interconnections to the System backplane. Power is also delivered through this connector. Peripherals on this board are accessed whenever -PCS1 from the CPU is active. U1401 and U1402 provide on-board decoding.

Power Supply Board

This section covers schematics MPWR-1 through MPWR-2 in Chapter 5.

Caution

Dangerous voltages are present on this circuit board whenever the instrument is attached to an AC power source and the rear panel power switch is "ON".

Always disconnect the power cord and wait at least one minute before opening the unit. Check the LED at the top edge of the power supply board. The unit is safe only if the LED is OFF. If the LED is ON, then DO NOT attempt any service on the unit.

Removing the Power Supply

Never remove or replace this board when the power cord is attached!

The Power Supply Board is held in by two rear panel screws which hold the power supply shield to the chassis. These screws prevent accidental removal of this board. The unit should never be operated without these screws in place.

Power Supply Connector

The 120 pin connector carries all of the necessary interconnections to the System backplane. Switch AC and the transformer secondaries are carried by this connector. The supply outputs to the System and Analyzer backplanes is also carried by this connector. For safety, this board cannot be inserted backwards.

Test Points

The test points along the top edge of the board are provided for supply testing while the instrument is powered ON. These test points are current limited for safety. Always measure the supply voltages relative to the correct ground test point as labeled on the board.

System Power

The system power for the System backplane, CPU, Video/IO, disk drive and CRT is provided by the switching power supply module mounted on the Power Supply board. This switcher is inside the power supply shield. The switcher accepts AC line input and generates +5V, -5V, +12V and -12V. The +5V powers all of the system logic (CPU and Video/IO) as well as the DSP logic. +12V powers the CRT and the fans.

Analog Power

Analog power to the Analyzer backplane is generated by a linear power supply. The transformer on the rear panel provides two 41VAC center tapped secondaries and two 26VAC secondaries. The 41VAC secondaries are used to generate ±20VDC supplies for the analog inputs and the source output. The 26VAC secondaries generate +30V isolated supplies for the ICP power.

Bridge rectifiers D1-D4 and D5-D8 rectify the 41VAC secondaries. Filter capacitors C10-C11 and C20-C21 provide filtered 28 VDC. Resistors provide a bleed current on all of the unregulated supply filter capacitors. Because of the large capacitance in this circuit, the time for the voltages to bleed to zero is about a minute after the power is turned off.

The ±20VDC supplies are generated by voltage regulators U10-U11 and U20-U21. These supplies are floating on this board. The ground reference for ±20V_D (source power) is on the DSP board. This supply floats if no DSP board is plugged in. The ground reference for ±20V_A (analog power) is on the analog input boards. This supply floats if no analog input board is plugged in.

The +30V supplies are very low current and only require small 100 mA regulators U30 and U40.

DSPBoard

ThissectioncoversschematicsD785-1throughD785-11inChapter5.

TheDSPboardtakesdigitalinputsfromtheA/DConvertersontheAnalogInputboards andperformsallofthecomputationsrelatedtothemeasurementbeforeitisdisplayedon thescreen.Thisincludesdigitalheterodyning(frequencyshifting),digitalfilteringand downsampling,FastFourierTransforming,averaging,andoutputdisplayprocessing (scaling,magnitudecalc,log,sqrt,etc.)Thesefunctionsareimplementedwithina systemcomprisedoffourfunctionalblocks:theDigitalSignalProcessor(DSP),the TimingGenerator,theI/OInterfaceandtheTriggerInput.

ThefifthfunctionalblockistheSourceGenerator.Thesourceissynthesized,filtered andattenuatedbeforebeingpassedtotheoutputconnector.

DigitalSignalProcessor

TheSR785utilizesasingleADSP21020digitalsignalprocessorclockedat33MHz.All instructionsarecompletedinasingle30nscycle.TheADSP21020hastwoexternaldata buses-DataMemory(DM)andProgramMemory(PM).Thereisnointernalmemory. Programmemoryis256kx48andDatamemoryis256kx40.Thememoryismounted onfourSIMMmodules.EachSIMMmodulecontains128kwordsof20ns128kx8 memoryIC's.

Inaddition,a2Mx32DRAMmoduleislocatedontheDMbus.Thismodulemaybe upgradedtoor8Mx32.PALU301providessimpleDRAMrefreshandcontrol functions.AccessestotheDRAMarealwaysmulti-cycle.TheDRAMisusedfor capture,waterfallandtracestorage.Thesefunctionsdonotrequirefastmultiplememory accesses.

CommunicationbetweentheDSPandthehostCPU(80C186)ishandledthroughFIFO memoriesU302-U304.Theseare25ns,4kx9FIFO's.U302andU303providea16bit widedatapathfromtheDSPtothehostCPU.Thisallowsdatatoflowtothehostfor displayasfastaspossible.U304providesan8bitdatapathfromthehostCPUtothe DSPforcommandsanddata.TheFIFO'sallowthesenderandthereceivertorunattheir fullrateswithoutwaitingfortheother.

TheDSPcaninterruptthehostbyraisingthe^186INT0line(outputfromportU710) andlatchingtherequestinU720A.Thehostclearstheinterruptbywritingtoaddress -INT0_CLR(decoderU805).ThehostCPUcaninterrupttheDSPvia-IRQ3bywriting toportsinU805.TheseinterruptsaregenerallyusedbythesendertosignalthataFIFO isfullandthereceivershouldreadtheFIFO.

TimingSignalGenerator

ThetimingsignalgeneratorprovidesalltimingsignalsfortheA/DandD/AConverters andtheircorrespondingserialports.ThemasterclockischosenfromeitherU705 (30.208Mhz)orU706(30.933Mhz).U706isusediftheFFTBaseFrequencyis102.4 kHzandU705isusediftheFFTBaseFrequencyis100.0kHz.U701-U703implementa 118state7-bitcounter.Thestatemachinegeneratestheconvertclocks,framesyncand bitclocksfortheconverters.U716re-synchronizestheclocksignalsanddrivestheoff-

boardsignalstotheAnalyzerbackplane.U712latchesthestateofthetiminggenerator whenatriggersignalisdetected.

ThetiminggeneratorinterruptstheDSPwhenevertheserialports(A/DandD/A)are ready(everysampletime).Thetriggerisalsosynchronizedtothestatemachineand generatesaninterrupt.

I/OInterface

TheA/DconvertersontheanalogboardssendaserialdatastreamtotheDSPboard. Eachanalogboardusesadual16bitconverterwithbothchannelsdigitizingthesignal. EachboardreturnstwodatastreamsforatotaloffourA/Dchannels.U401-U404and U405-U408are32bitserialtoparallelconverters,eachreceivingtwo16bitdata channelsfromasingleanalogboard.

U409-U410isa16bitparalleltoserialconverterwhichsendsDSPdatatothesource D/Aconverter.

Trigger

TheTriggerinputcanbeaTTLlevelsignalorananalogsignal.T601providessome common-moderejectionforthetriggerinput.RelayK602selectsTTLorAnalogLevel Trigger.RelayK601allowsthetriggersignaltocomefromtheoutputoftheanalog front-endamplifiersortheexternal"TRIGGER"frontpanelBNC.Triggersignalspass throughtheXORgateU602Cwhererisingorfallingedgetriggerslopeisselected.TTL triggersproceeddirectlytotheXORgateviasomeinputprotection.Analoglevelsignals arefirstconvertedtoaTTLsignalviahigh-speedcomparatorU603.

Attheheartofthetriggerinputistheanaloghigh-speedcomparator,U603(LT1016). TheinputisbufferedbyU601AandlimitedbydiodesD601andD6302.N601divides thetriggersignalandtriggerlevelbytwotoaccommodatetheinputrangeofthe comparator.C604provideshigh-frequencyhysteresiswhentheoutputlatchcannot respondfastenough,andU601BandU602Aprovidelow-frequencyhysteresis.R603 andN601Adeterminethelevelofhysteresis.TheDCtriggerlevelissetbythe8-bit DACU607A.U606buffersandshiftstheDACoutput.

TheTrig_Insignalislatchedin PALU703whichsynchronizesthetriggertotheA/D clocksandinterruptstheDSP.

Tachometer

TheTachometerinputcanbeaTTLlevelsignalorananalogsignal.T611provides somecommon-moderejectionforthetriggerinput.RelayK615AselectsTTLorAnalog LevelTachometerTrigger.TTLtachsproceeddirectlytotheXORgateU612Bviasome inputprotection.

Attheheartoftheanalogtachometerinputistheanaloghigh-speedcomparator,U605 (LT1016).TheinputisbufferedbyU604AandlimitedbydiodesD605andD606.N602 dividesthetachsignalandtachlevelbytwotoaccommodatetheinputrangeofthe comparator.C624provideshigh-frequencyhysteresiswhentheoutputlatchcannot respondfastenough,andU604BandU612Aprovidelow-frequencyhysteresis.R623 andN602Adeterminethelevelofhysteresis.TheDCtriggerlevelissetbythe8-bit DACU607B.U606DbuffersandshiftstheDACoutput.

TheTachsignalsarelatchedinPALU616whereslopeselectionandholdoffis implementedinconjunctionwithcounterU613.PALU714receivesthetachsignaland interruptstheDSP.

SourceGenerator

ThesourceisoutputbyDACU501(AD766).SincetheDACisclockedsynchronously withtheA/Dconverters,thesourceissynchronouswiththeinputsampling.

TheoutputofU501isbufferedbyU502(AD744).U505-U507formanellipticanti-aliasingfiltertoremovehighfrequencycomponents.K501selectstheanti-aliasingfilter outputorthepinknoisefilteroutput(U530)asthesource.U509Aisusedasan8bit attenuatorandU510isadivideby10or100attenuator.U512isahighcurrentoutput bufferwhichprovidesthelowoutputimpedance.

InterfaceToCPU

TheCPUinterfaceprovidesthecommunicationpathwaybetweentheDSPboardandthe mainCPUboard.Allsignalinterconnectionsaremadeviathe120pinconnectorJ902. U801-U803arebuffersfortheaddressanddatabusconnections.Thesebufferchipsare enabledonlywhentheCPUboardiswritingtotheDSPboard.Thisissignaledby-PCS4 fromthe80C186.Thishelpsisolatetheactivityonthe CPUboardfromaffecting circuitryontheDSPboard.U808andU809aresimplelatchesusedtoholdconfiguration datafortheDSPboard.U805isadecoderwhichgeneratesthechipselectsandstrobes neededbytheDSPboard.U810isaserialEEPROMwhichholdsthecalibrationdata requiredbythesourceandtriggercircuits.

AnalogInputBoards

ThissectioncoversschematicsA780-1throughA780-7inChapter5.

TheAnalogInputboardsprovidetheveryimportantlinkbetweentheuser'sinputsignal andtheDSPprocessor.FromthefrontpanelBNC,theuser'ssignalpassesthroughalow distortionfront-endamplifier,gainstages,attenuators,anti-aliasingfilter,andfinallyan A/DConverter.Onceconvertedtodigitalform,theinputsignalisreadytobeprocessed bytheDSP.

ThetwoinputsuseidenticalAnalogInputboards.TheroutingontheAnalyzer backplanekeepsthemseparate.

InputAmplifier

Thegoalofanymeasurementinstrumentistoperformsomegivenmeasurementwhile affectingthequantitiestobemeasuredaslittleaspossible.Assuch,theinputamplifier isoftenthemostcriticalstageintheentiresignalpath.Thedesignofthefrontendinput amplifierintheSR785wasdrivenbyanefforttoprovideoptimumperformanceinthe followingareas:inputvoltagenoise,inputcurrentnoise,inputcapacitance,harmonic distortion,andcommonmoderejection(CMR).Toprovidesuchperformance,anFET differentialinputamplifierwithcommon-modefeedbackarchitecturewaschosen.

Theinputsignalisfirstpassedthroughaseriesofrelaystoselectinputmode(K102), inputcoupling(K104)andinputattenuation(K105,K108).RelayK101providesshield grounding.RelayK106switchesintheICPcurrentsupply.The-30dBinputattenuator formedbyresistorsR103-R106servestoattenuateverylargesignalsaswellasproviding protectionontotheinputFETinthepresenceofveryhighvoltages(>50Vpk).Toprevent damagetotheinputFET,theinputvoltageismonitoredbycomparatorsU106andU107. Highvoltagescausetheinputattenuatortobeautomaticallyengagedregardlessofthe usergainsettingatthefrontpanel.ResistorsR107andR108providesomeinput protectionontotheinputFET,withonlyaslightpenaltyininputvoltagenoise.

TheinputFETU100isanextremelylow-noisematchedpairofFET'swithavoltage inputnoiseofapproximately3.5nV/ √Hz.Toimprovedistortionperformance,theinput FET'sarecascodedtomaintainaconstantdrain-sourcevoltageacrosseachFET.This preventsmodulationofthedrain-sourcevoltagebytheinputvoltage.U104sensesthe sourcevoltageandmaintainsthesamevoltageatthedrainwithsomeDCoffset determinedbyresistorsN102andN103.U103Bprovidescommon-modefeedbackand maintainsaconstantdraincurrentineachFET.U105providesthesingle-endedoutput. Thegainofthefrontendiseither10dBor20dBasselectedbyrelayK107.Whena gainof10dBisselected,theoffsetandCMRareadjustedviaP104andP103 respectively.Whenagainof20dBisselected,offsetandCMRareadjustedviaP102 andP101respectively.

GainStagesAndAttenuators

Collectively,thefrontendamplifier,gainstagesandattenuatorsprovidesensitivity rangesfrom-50dBVto+34dBV.Thisisaccomplishedthroughthefront-endamplifier, twogainstagesandaresistiveladderattenuator.

Thetwogainstagesareidenticalinvertingamplifiers.Eachhasselectablegainof-10 dB,0dB,10dBor20dB.Toachievethedesiredgain,thefrontendattenuatorand amplifierandthesetwogainstagesarecascadedtogether.Thesignalpathalways includesthesamenumberofamplifiers.

Theresistiveladderattenuator(R211-R216)providesattenuationfrom0dBto-10dBin 2dBsteps.Thisimprovesthegainresolution.U206isthebufferedamplifieroutput.

ComparatorsU220andU392detectoverloadandhalf-scaleamplifieroutputbasedupon theA/Dconverterreferencevoltage.

Anti-AliasingFilter

Topreventaliasing,theinputsignalpassesthroughalow-passfiltersothatallfrequency componentsgreaterthanhalfthesamplingfrequencyareattenuatedbyatleast96dB. Thisisaccomplishedwithan8-zero9-poleellipticallowpassfilter(U230-U233).The passbandofthisfilterisDCto102.4kHzwithariippleof0.5dB.Thestopbandbegins at156kHz.Stopbandattenuationisnominally100dB.

U234Afollowstheanti-aliasingfiltertosumtheDCoffsetcorrectionfromDACU361 withthesignal.

Asecond51.2kHzanti-aliasingfilter(U240-U243)isusedfortwochanneloctave measurements.RelaysK202,K203andK204selectananti-aliasingfilter(orbypasses thefiltersaltogether).ThefilteroutputisbufferedbyU244AandU244B(tothetrigger circuitontheDSPboard).

A-WeightingFilter

TheA-Weightingfilterisconstructedwithastandardimplementationusing U310Aand U310B.RelayK301selectsthefilter.

U317isadualamplifierwhichsplitsthesignalintotwopaths-invertedandnon-inverted.EachsignalpathdrivesoneoftheA/Dchannels.

ComparatorU391detectsoverloadbasedupontheA/Dconverterreferencevoltage.

A/DConverter

TheA/DConverterconvertstheinvertedandnon-invertedsignalstotwodigitaldata streams.Conversiontakesplaceatarateof262,144samplespersecond(FFT Base=102.4kHz).ABurr-BrownPCM1750dual18-bitA/Dconverterisusedforthis purpose.U402AandU402Ddrivethedatasignalstothe Analyzerbackplaneandtothe DSPboard.TimingsignalsfortheA/DConverterarereceivedviaU402BandU402C.

I/OInterface

TheAnalogInputboardisconfiguredbytheDSPboardviaitsserialI/OInterface. U601-U603forma24bitshiftregisterandlatch.Dataisshiftedinserriallyfromthe DSP boardandlatchedtointernallatches.Theoutputsofthelatchesareusedtocontrol relays,switches,etc.Duringnormaloperation,thisinterfaceisstaticandnorandom digitalnoiseispresentonthisboard.

U606isaserialEEPROMcontainingthecalibrationsfortheamplifierandanti-aliasing filter.U606isreadbythehostCPU(80C186)viaaportontheDSPboard.This EEPROMisonlyreadatpoweronanddoesnotcontributedigitalnoisetothisboard.

Power

SeveralvoltagesaregeneratedontheAnalogInputboardlocally.±15Visgeneratedfor mostoftheanalogIC's(U531-U532).Adedicated±15Vsupplyisalsogeneratedforthe front-endamplifier(U501-U502).±5VisgeneratedfortheA/DConverter(U521-U522) aswellasadigital+5VforthedigitalI/O(U690).Analog±6Visgeneratedforthe analogswitches(U541-U542).+12Visprovidedfortherelays(U551).U511provides thehighvoltagebiasfortheICPsupply.

The±20VDCsupplywhichisthesourceofmostofthepowersuppliesisnotgrounded atthepowersupply.ItisgroundedbytheAnalogInputboardtoreducegroundloopsat theanaloginputs.Thus,the±20VDCfloatswhennoAnalogInputboardsarepresent.If eitherAnalogInputboardispresent,thenthissupplyisgrounded.

Chapter3

Service

Thischapterprovidesatroubleshootingguidewithserviceproceduresto debugandrepairthisunitata boardorassemblylevel.

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Before Proceeding With Service

Warranty Service

For warranty service or repair, this product must be returned to a Stanford Research Systems authorized service facility.

Do not attempt any service without first contacting Stanford Research Systems or an authorized representative. Replacement parts, boards and assemblies are available only from Stanford Research Systems or its authorized representatives.

CAUTION!

Potentially lethal voltages are present in this instrument. This unit is to be serviced by qualified service personnel only. There are no user serviceable parts inside.

Check the red LED at the top edge of Power Supply board. The unit is safe only if the LED is OFF. If the LED is ON, then voltages are present within the unit - USE CAUTION.

Use caution when checking circuits with the power on.

Always disconnect the power cord before replacing or servicing any component inside the chassis.

Reset

Reset the unit by turning the power off and back on while holding down the backspace key. This clears the stored setup and re-initializes the instrument. If the problem is solved, do not proceed to service any internal components. If the problem continues, proceed with the proper service procedures.

Always reset the instrument after performing any service.

Calibration

The only field service which may be performed is at the board and assembly level. If the DSP board or either Analog Input board is replaced (with factory calibrated replacement boards), the unit will remain calibrated. If individual components are replaced on a board, the calibration is not guaranteed. Individual component replacement on the DSP or Analog boards is not recommended.

TroubleshootingTable

Symptoms	Procedure
Screenisblankwhen poweristurnedon.	• Doestheunitbeepwhenfrontpanelkeysarepressed? Yes-seeDisplayProblems. • Afterreset,isthereasignalattheSourceOutput?Yes-seeDisplayProblems. • ProceedtoServiceProcedureA2(PowerSupply Check).IftthePowerSupplyisOK,seeDisplay Problems.
DisplayProblems	• Isthescreenbrightnessturneddown?PresstheBrighter buttonatthelowerrightofthescreen(belowthe softkeys). • Isthedisplayunstable?Yes-proceedtoService ProcedureB2(CRTCheck). • Isthedisplayblank?Yes-proceedtoServiceProcedure B2(CRTCheck). • Iftherestillaproblem,proceedtoServiceProcedureD3 (Video/IOBoardReplacement).
Keypadnotfunctioning	• Isthereakeystuckinthedownposition?Yes-release thestuckkey. • ProceedtoServiceProcedureC1(KeypadCheck).
Knobnotfunctioning	• ProceedtoServiceProcedureC2(KnobCheck).
[System]<Diagnostics> SystemRAMcheckfails	• ProceedtoServiceProcedureD1(CPUBoard Replacement).
[System]<Diagnostics> SystemROMcheckor HelpROMcheckfails	• ContactSRSforreplacementROMcomponents.If failurecontinuesproceedtoServiceProcedureD1(CPU BoardReplacement).
[System]<Diagnostics> VideoRAMcheckfails	• ProceedtoServiceProcedureD3(Video/IOBoard Replacement).
Unitdoesnotrecall settingsatpoweron.	• ProceedtoServiceProcedureD2(BatteryCheck).
Clockdoesnotkeep timecorrectly	• ProceedtoServiceProcedureD2(BatteryCheck).

Symptoms	Procedure
PowerOnDSPmemory checkfails. Use[System]<Show Version>toreviewtest results.	• IfDataMemoryfails,proceedtoServiceProcedureF7 (ReplacingDSPMemoryModules). • IfProgramMemoryfails,proceedtoServiceProcedure F7(ReplacingDSPMemoryModules). • IfDRAMErrorsaredetected,proceedtoService ProcedureF7(ReplacingDSPMemoryModules). • IftheDSPCalROMisnotOK,proceedtoService ProcedureF1(DSPBoardReplacement). • ProceedtoServiceProcedureF1(DSPBoard Replacement).
Sourceoutputincorrect	• ProceedtoServiceProcedureF6(CheckingtheSource).
DSPmemoryupgrade	• ToupgradetheDSPDRAMto4Mor8M,proceedto ServiceProcedureF7(ReplacingDSPMemory Modules).
PowerOnAnalog memorycheckfails. Use[System]<Show Version>toreviewtest results.	• IftheCh1orCh2AnalogCalROMisnotOK,proceed toServiceProcedureF2(AnalogBoardReplacement).
DiskDriveproblems	• CheckthatyourdiskisDS/DDorDS/HD.Tryanew disk. • Checkthatthediskwriteprotecttabisclosed. • Performthediskdrivetestinthe [System]<Diagnostics>menu. • ProceedtoServiceProcedureG1(DiskDrive Replacement). • Ifthereisstillaproblem,proceedtoServiceProcedure D3(Video/IOBoardReplacement).

Symptoms	Procedure
RS232problems	• CheckthattheRS232cableisattachedsecurelytothe RS232portontherearpanel(NOTtothePrinterport). Useatestedcable. • CheckthattheSR785issettooutputdatatotheRS232 interface(NOTtheGPIBinterface).Theoutput interfaceissetinthe[System]<Remote>menu. • ChecktheRS232setupinthe[System]<Remote>menu. Makesurethattheproperbaudrate,wordlengthand parityisselected. • Placea'loopback'connectorontheRS232port.Aloop backconnectorisamaleDB25connectorwithpins2 and3connectedtogether.PerformtheRS232testinthe [System]<Diagnostics>menu.Ifthetestfails,proceed toServiceProcedureD3(Video/IOBoard Replacement).
GPIBproblems	• CheckthattheGPIBcableissecurelyfastenedtothe rearpanelGPIBport.Useatestedcable. • CheckthattheSR785issettooutputdatatotheGPIB interface(NOTtheRS232interface).Theoutput interfaceissetinthe[System]<Remote>menu. • ChecktheinstrumentGPIBaddress.Theaddressisset inthe[System]<Remote>menu. • ProceedtoServiceProcedureD3(Video/IOBoard Replacement).
Printerproblems	• Checkthattheprintercableisattachedsecurelytothe Printerportontherearpanel(NOTtheRS232port). Useatestedcable. • ChecktthePrinterTypeselectedinthe[Output]menu. TheSR785canoutputtoEpsoncompatibledotmatrix printersorHPLaserJet/InkJetcompatiblelaserprinters. • MakesurethattheprinterisOn-Lineandhaspaper. • ProceedtoServiceProcedureD1(CPUBoard Replacement).

Symptoms	Procedure
Unitdisplaysanactive baselinespectrumbutno signal.	• Applyaknown10kHz0.5VrmssinewavetotheA inputofthenon-functioningchannel.Doesthesignal appearinthespectrum?No-proceedtoService ProcedureF3(CheckingtheAnalogInputs). • DoestheunitpasstheDSPmemorychecks?Use [System]<ShowVersion>toreviewthepowerontest results.No-seeDSPmemorycheckfails. • DoestheunitpasstheAnalogboardmemorychecks? Use[System]<ShowVersion>toreviewthepoweron testresults.No-seeAnalogmemorycheckfails.
Nodatagraphedinthe displays.	• DoestheunitpasstheDSPmemorychecks?Use [System]<ShowVersion>toreviewthepowerontest results.No-seeDSPmemorycheckfails. • ProceedtoServiceProcedureD1(CPUBoard Replacement).
Inputproblems (coupling,groundingor inputrange).	• Applyaknown10kHz0.5VrmssinewavetotheA inputofthenon-functioningchannel.Doesthesignal appearinthespectrum?No-proceedtoService ProcedureF3(CheckingtheAnalogInputs). • ProceedtoServiceProcedureF2(AnalogBoard Replacement).
Measuredamplitudeof signalnotcorrect.	• ProceedtoServiceProcedureF4(AmplitudeCheck).
Unitdoesnottriggeror triggerisunstablewhen intriggeredmode.	• ProceedtoServiceProcedureF5(TriggerCheck).
LargeDCoffseton spectrum.	• ProceedtoServiceProcedureJ1(AdjustingDCOffset andCMR).
CommonMode Rejectionproblem.	• ProceedtoServiceProcedureJ1(AdjustingDCOffset andCMR).
UpdatedROMSare available	• ProceedtoServiceProcedureD1(CPUBoard Replacement)forprogramROMS(U301-306)andHelp ROMS(U801-U802). • ProceedtoServiceProcedureF1(DSPBoard Replacement)fortheDSPROM

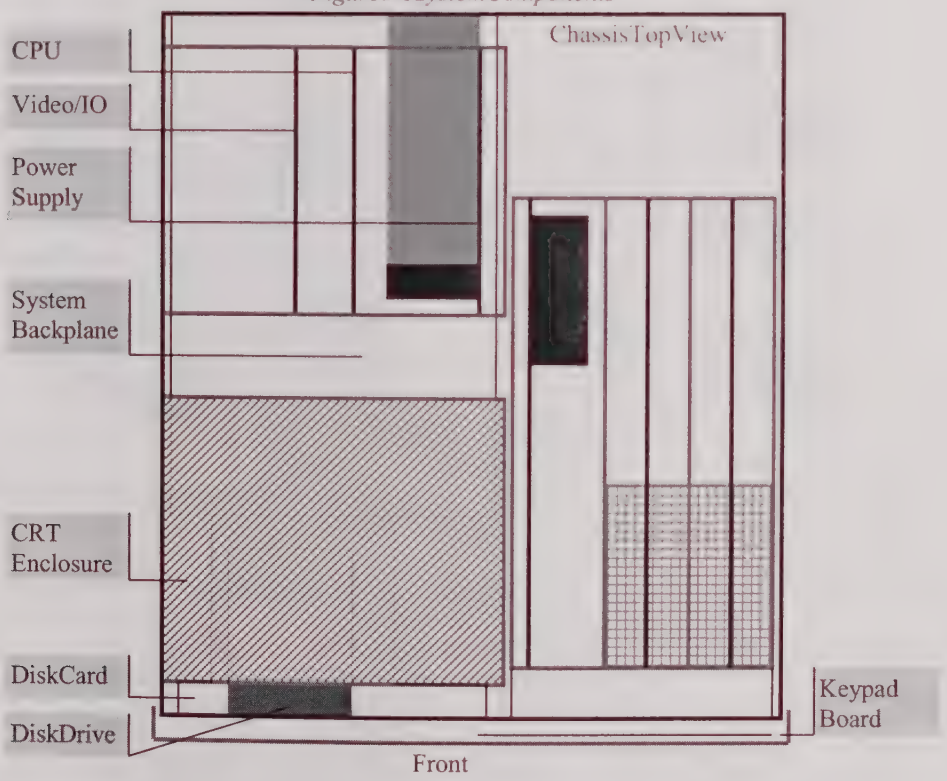
CircuitBoardLocations

TheSR785'scircuitryisdividedintotwomajorsections-the *systemsection*andthe *analyzersection*.Thesystemsectioncontainsthemainprocessor(CPU),videodisplay, externalinterfaces,powersupplyandfrontpanel.Theanalyzersectioncontainsthe digitalsignalprocessor(DSP),sourceoutputandanaloginputs.

SystemComponents

Thesystemsectioncomponentsarelocatedinthelefthalfofthechassis,behindand belowtheCRT(videodisplay).Thecardcagebehindthe CRTcontainsthepower supply,mainCPUcardandthevideo/IOcard.Thecardsareinterconnectedbya backplaneboardunderthecardcage.Thediskdriveismountedtoasmallboardbeneath theCRT.Thiscardcanberemovedfromthefront.Thekeypadconnectstothedisk boardatthefrontofthechassis.

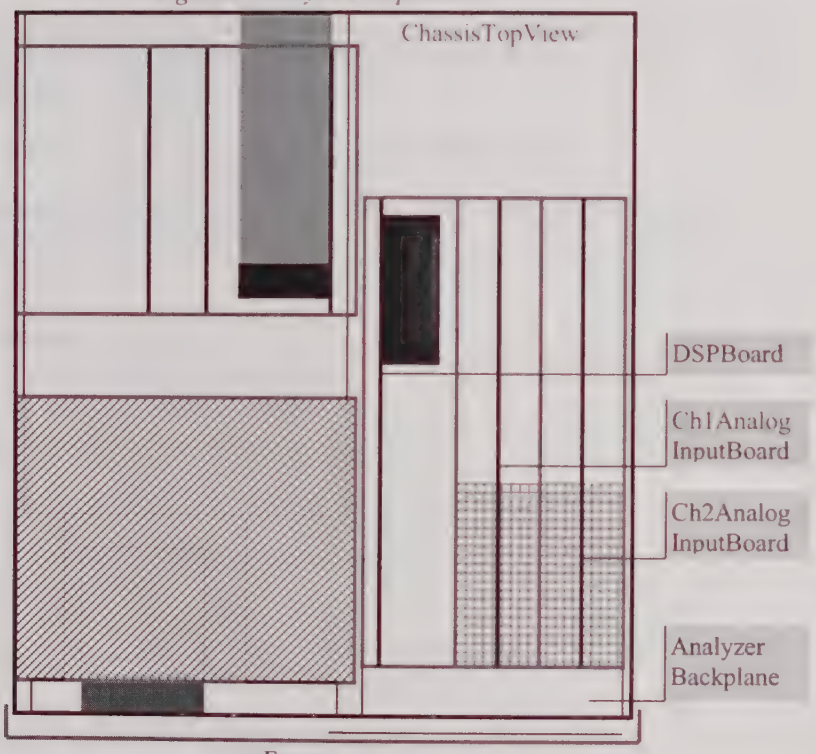
Figure8-1SystemComponents



AnalyzerComponents

Theanalyzersectionisintherighthalfofthechassis,directlybehindthekeypad.Acard cagecontainstheDSPboardandtwoidenticalanaloginputboards.Theanalyzerboards areinterconnectedbyabackplaneboardunderthecardcage.Thisbackplaneextendsall thewaytothefrontpanelBNCconnectors.Theanalyzerbackplaneconnectstothe systembackplaneviatwoshortcablesatthecenterofthechassisjustbehindtheCRT.

Figure8-2AnalyzerComponents



SchematicDiagramLocations

Schematicdiagramsarelocatedin Chapter10.

Board/AssemblySchematic#'s(seeChapter10)	
CPUBoard	MCPU-1throughMCPU-9
Video/IOBoard	MVID-10throughMVID-14
PowerSupply	MPWR-1throughMPWR-2
SystemBackplane	MBKPL-20throughMBKPL-23
DiskCard	MBKPL-24
KeypadBoard	MKEY-1
DSPBoard	D785-1throughD785-11
AnalogInputBoards	A780-1throughA780-7
AnalyzerBackplane	M780-1throughM780-4

ServiceProcedures

Caution

Potentiallylethalvoltagesarepresentinthisinstrument.Thisunitistobe servicedbyqualifiedservicepersonnelonly.Therearenouser serviceablepartsinside.

ChecktheredLEDatthetopedgeofPowerSupplyboard.Theunitis safeonlyiftheLEDisOFF.IftheLEDisON,thenvoltagesarepresent withintheunit-USECAUTION.

Usecautionwhencheckingcircuitswiththepoweron.

Alwaysdisconnectthepowercordbeforereplacingorservicingany componentinsidethechassis.

RequiredEquipment

1. DC/ACVoltmeter(DVM)
   51/2digitaccuracy
   TrueRMSACto100kHz

   Recommended:Fluke8840AwithOption09(orequivalent).

2. FrequencySynthesizer(functiongenerator)
   1Hzto100kHz
   0.2dBamplitudeaccuracy

   Recommended:SRSDS335(orequivalent).

3. Philipsscrewdrivers(varioussizes).

4. Slotheadscrewdrivers(varioussizes).

5. Hexkeys(varioussizes).

6. Oscilloscope(10MHzbandwidthorgreater).

ServiceProcedureA1(PowerSupplyBoardReplacement)

1. **TurnthepowerOFF.Removethepowercordfromthepower entrymodule.**
2. Removetheeightblackscrewswhichsecurethetoplid.Therearefourscrewson eachside,twoatthefrontandtwoattherear.Removethelidbypullingthelid towardsthebackandupwards.

3. SeeFigure8-1tolocatethePowerSupplyboard.MakesurethattheredLEDatthe topedgeoftheboardisOFFbeforeproceeding.Releasethebarwhichsecuresthe boardsinplace.
4. Removethetwoscrewswhichsecurethepowersupplyshieldtotherearpanel. Thesearelocatedontherearpaneldirectlyinbackofthepowersupplyboard.
5. RemovethePowerSupplyboardbyusingthecardejectorstoreleasetheboardand pulltheboardupandout.
6. Insertthenewboardmakingsuretoalignteboardedgeswiththeplasticcard guidesbeforepressingtheboardintoplace.Makesurethattheboardisseated completelyinitssocket.
7. Replacethetwoscrewswhichsecurethepowersupplyshieldtotherearpanel.
8. Replacethebarwhichsecurestheboardsinplace.
9. Replacethetoplidandrefastentheeightlidscrews.

ServiceProcedureA2(PowerSupplyCheck)

1. **TurnthepowerOFF.Removethepowercordfromthepower entrymodule.**
2. Removetheeightblackscrewswhichsecurethetoplid.Therearefourscrewson eachside,twoatthefrontandtwoattherear.Removethelidbypullingthelid towardsthebackandupwards.
3. CheckttheACpowersourceforthecorrectlinevoltage,either100V,120V,220Vor 240V(ACrms).MakesurethatthepowercordisOK.
4. VerifythattheLineVoltageSelectorcard,locatedintherearpanelfuseholder,is setsothatthecorrectACinputvoltagevalueisvisible.ConversiontootherAC inputvoltagesrequiresachangeinthefuseholdervoltagecardpositionandfuse value.Disconnectthepowercord,openthefuseholdercoverdoorandrotatethe fuse-pulllevertoremovethefuse.Removethesmallprintedcircuitboardandselect theoperatingvoltagebyorientingtheprintedcircuitboardsothatthedesiredvoltage isvisiblewhenpushedfirmlyintoitsslot.Rotatethefuse-pullleverbackintoits normalpositionandinsertthecorrectfuseintothefuseholder.
5. VerifythatthecorrectfuseisinstalledFor100V/120V,usea1.5Afuse.For 220V/240V,usea3/4Afuse.UsetheDVMtoverifythatthefuseisnotblownor damaged.

6. **Disconnectthepowercord!**

   UsetheDVMtocheckthattheGNDtestpointonthePowerSupplyboardis connectedtothechassisandalsotothegroundpinofthepowerentrymodule.The GNDtestpointisatthetopedgeoftheboarddirectlybehindthenotch.IfGNDis notshortedtochassisorpowerground,checktheGND(green)wiresontherear panelchassisgroundconnection(abovethepowerswitchontheinside).Onegreen wireconnectsdirectlytothepowerentrymoduleground,theothertotheSystem backplaneviatheACpowerconnector.

Donotcontinueifthereisafaultinthechassisorpower grounds!

7. ConnectthepowercordandturnthepowerON.Thefansshouldturnandthered LEDatthetopoftheboardshouldbeON.Ifthefansdonotturnor theLEDstays off,turnthepowerOFFandremovethepowercord.CheckthACpowerconnector andtransformerconnectorintegrity.YoumayneedtoremovethePowerSupply boardtodothis.SeeProcedureA1fordetailsonremovingthePowerSupplyboard.

8. Checkthevoltagesonthepowersupplytestpoints.Thisproceduremeasuresthe supplyvoltagesunderload(allotherboardsarepresent)andwithallgrounding pathspresent.IftheDSPorAnalogboardsarenotpresent,thenthevoltageslabeled ANLG,CH1+30V,CH2+30VandDIGmustbemeasuredrelativetotheAGND, CH1RET,CH2RETandDGNDtestpoints.

   Assumingthatallotherboardsarepresent,connectthenegativeleadoftheDVMto thechassis.Usethepositiveleadtomeasurethetestpointsalongthetopofthe powersupplyboard,startingattherear.

DigitalPower

TestPoint	Nominal
-12V	-12V±5%
-5V	-5V±5%
+12V	-12V±5%
+5V	+5V±5%
Ground	0V

ANLGPower

TestPoint	Nominal
-28V	<-23V
+28V	>+23V
-20V	-20V±5%
+20V	+20V±5%
AGND	0V

CH2

TestPoint	Nominal
+30V	+30V±5%
RET	0V

CH1

TestPoint	Nominal
+30V	+30V±5%
RET	0V

DIGPower

TestPoint	Nominal
-28V	<-23V
+28V	>+23V
-20V	-20V±5%
+20V	+20V±5%
DGND	0V

9. Ifthesuppliescheckok,thenreplacethetoplidandrefastentheeightlidscrews.
10. Ifthesuppliesarenotcorrect,tryoneorbothofthefollowing.

    A.FollowprocedureA1toreplacethepowersupplyboardandrepeatthischeck.

    B.Removeoneormoreoftheotherboardsandrecheckthepowersupply.This assumesthatthesupplyvoltageisbeingaffectedbyabadboardelsewhereinthe unit.

    TheDigitalpowerdrivestheCPU,Video/IO,DiskcardsandtheCRTassembly.

    TheANLGandCH1powerdrivestheCh1analoginputboard.

    TheANLGandCH2powerdrivestheCh2analoginputboard.

    TheDIGpowerdrivestheDSPboard.

    Ifremovingaboardfixesthesupplyvoltage,thenproceedtoreplacethesuspect boardorassembly.

    Ifnothingseemstohelp,contactStanfordResearchSystemsoranauthorized representative.

ServiceProcedureB1(ReplacingtheCRT)

1. **TurnthepowerOFF.Removethepowercordfromthepower entrymodule.**
2. Removetheeightblackscrewswhichsecurethetoplid.Therearefourscrewson eachside,twoatthefrontandtwoattherear.Removethelidbypullingthelid towardsthebackandupwards.
3. ReleasetheCRTconnectorcablefromtheSystembackplane(behindtheCRT enclosure).
4. TheCRTenclosureissecuredbyfourscrews,twontheleftandtwoontheright. Thesescrewsareinslotsintheenclosure.Removethesescrews.
5. SlidetheCRTenclosurebackuntilthefrontclearsthefrontpanelbezel.Liftthe enclosureupandout(it'sheavy).
6. LowerthenewCRTenclosureintothechassisandslideitforward.Makesurethat theslotsintheenclosureoverlapthemountingscrewholesalongthesides.
7. Insertthefourscrewswhichsecuretheenclosure.Donottightenthem.
8. GentlyslidetheCRTenclosureforwarduntilthefrontoftheCRTjusttouchesthe plasticanti-glarescreen.SlidetheCRTback1/8"sothatthefrontoftheCRTisjust behindtheanti-glarescreen.Tightenthefourscrewstosecuretheenclosureinplace.

9. ConnecttheCRTcabletotheSystembackplane(behindtheCRTenclosure).Make surethatthecableislockedintoplace.
10. Replacethetoplidandrefastentheeightlidscrews.

ServiceProcedureB2(CRTCheck)

1. **TurnthepowerOFF.**
2. Removetheeightblackscrewswhichsecurethetoplid.Therearefourscrewson eachside,twoatthefrontandtwoattherear.Removethelidbypullingthelid towardsthebackandupwards.
3. **TurnthepowerON.**

   UsetheDVMtocheckthe+12VpowersupplytotheCRT.SeeFigure8-1tolocate thePowerSupplyboard.Measurethe+12VtestpointonthePowerSupplyboard relativetothechassis.Thevoltageshouldbewithin5%ofnominal.Ifthe+12V supplyisfine,proceedtoProcedureB1andreplacetheCRTassembly.
4. Ifthe+12Vsupplyisnotwithinnominal,checkthesupplyvoltagewithouttheCRT connected.TurnthepowerOFF.RemovetheCRTcablefromtheconnectoronthe Systembackplane(behindtheCRTenclosure).TurnthepowerbackON.Measure the+12VtestpointonthePowerSupplyboardrelativetothechassis.Thevoltage shouldbewithin5%ofnominal.Ifthe+12Vsupplyisfine,proceedtoProcedureB1 andreplacetheCRTassembly.Ifthe+12Vsupplyisstillnotwithinnominal,turn thepowerOFF,replacetheCRTcableandproceedtoProcedureA1(PowerSupply Replacement).

ServiceProcedureC1(KeypadCheck)

1. PerformtheKeypadcheckinthe[System]<Diagnostics>menu.Ifthetestpasses, thenthekeypadisOK.Ifthetestfailsorcannotbecompleted,thenproceed.

2. **TurnthepowerOFF.Removethepowercordfromthepower entrymodule.**
3. Removetheeightblackscrewswhichsecurethetoplid.Therearefourscrewson eachside,twoatthefrontandtwoattherear.Removethelidbypullingthelid towardsthebackandupwards.
4. Removethetwohexscrewswhichconnectthehandlearmstothechassis.Remove thehandlebypullingthearmsapartslightly.
5. Removetheeightscrewswhichsecurethefrontpanelbezeltothechassis.These screwsareexposedwhenthelidisremoved.Therearetwoscrewsalongeachside andthetopandbottom.
6. Removethefrontpanelbezelbypullingitslowlyofftowardsthefront.Thekeypad isattachedtothebezel.Thereisagroundwireandcableextendingfromthekeypad backtothemainchassis.
7. ThekeypadandknobareattachedtotheDiskcardbyaribboncable.Thiscable attachesnexttotheKeyboardconnectorbelowtheCRT.Thecableattachestothe

backofthekeypadboard(onthefrontpanel).Makesurethatthecableisfirmly attachedatbothendsandthatthecableisnotdamaged.

8. Checkthatthegroundwireisattachedfirmlytothechassisandtothekeypadboard.
9. PushtheDiskcardinwardtomakesurethatitisseatedproperly.Thekeypadsignals arecarriedtotheSystembackplaneviathiscard.
10. Replacethefrontpanelbezel,beingcarefultoengagetheslotswhichsecurethe frontoftheDiskcard.
11. Replacetheeightbezelscrews.Replacethehandleandthepivotscrews.
12. Ifthekeypadstilldoesnotfunction,thentheproblemmaybeontheCPUboard.The keypadcircuitboardcontainsnoactivecircuitryandtherubberkeysarevery unlikelytofail.ToreplacetheCPUboard,followProcedureD1(CPUBoard Replacement).
13. Replacethetoplidandrefastentheeightlidscrews.

ServiceProcedureC2(KnobCheck)

1. PerformtheKnobcheckinthe[System]<Diagnostics>menu.Verifyknobrotation anddirection.Ifthetestpasses,thentheknobisOK.Ifthetestfailsorcannotbe completed,thenproceed.

2. **TurnthepowerOFF.Removethepowercordfromthepower entrymodule.**
3. Removetheeightblackscrewswhichsecurethetoplid.Therearefourscrewson eachside,twoatthefrontandtwoattherear.Removethelidbypullingthelid towardsthebackandupwards.
4. Removethetwohexscrewswhichconnectthehandlearmstothechassis.Remove thehandlebypullingthearmsapartslightly.
5. Removetheeightscrewswhichsecurethefrontpanelbezeltothechassis.These screwsareexposedwhenthelidisremoved.Therearetwoscrewsalongeachside andthetopandbottom.
6. Removethefrontpanelbezelbypullingitslowlyofftowardsthefront.Theknobis attachedtothebezel.Thereisagroundwireandcableextendingfromthekeypad backtothemainchassis.
7. Theknobisconnectedbya5wireribboncabletothekeypadassembly.Checkthat thecableissecureatbothends.
8. ThekeypadandknobareattachedtotheDiskcardbyaribboncable.Thiscable attachesnexttotheKeyboardconnectorbelowtheCRT.Thecableattachestothe backofthekeypadboard(onthefrontpanel).Makesurethatthecableisfirmly attachedatbothendsandthatthecableisnotdamaged.
9. Checkthatthegroundwireisattachedfirmlytothechassisandtothekeypadboard.
10. PushtheDiskcardinwardtomakesurethatitisseatedproperly.Theknobsignals arecarriedtotheSystembackplaneviathiscard.
11. Iftheknobstillfailstofunction,proceedtoreplacethedigitalpot.

12. Thedigitalpotissecuredtothefrontpanelbezelbyanutunderneaththeplastic knob(ontheoutside).Pryoffthefrontcoveroftheplasticknobwithasmall screwdriveroryourfingertips.(Thecoveristheplasticdiskwiththedimpleinit.) Removetheplasticknobbylooseningthenutwhichholdstheplasticknobontothe digitalpot'sshaft.
13. Removethemountingnutatthebaseoftheshaft.Oncethisnutisremoved,thepot canberemovedfromthebezel.Pullthepotfreewhileleavingthecableattached. Movethecablefromtheoldpottothenewpotmaintainingthecorrectcable orientation.
14. Placethenewpotshaftintotheholeinthebezelandsecuretheshaftwiththe mountingnut.Replacetheplasticknobontheshaftandtightenthenutatthecenter. Replacetheknobcover.
15. Replacethefrontpanelbezel,beingcarefultoengagetheslotswhichsecurethe frontoftheDiskcard.
16. Replacetheeightbezelscrews.Replacethehandleandthepivotscrews.
17. Iftheknobstilldoesnotfunction,thentheproblemmaybeontheCPUboard.The keypadcircuitboardcontainsnoactivecircuitryandisveryunlikelytofail.To replacetheCPUboard,followProcedureD1(CPUBoardReplacement).
18. Replacethetoplidandrefastentheeightlidscrews.

ServiceProcedureD1(CPUBoardReplacement)

1. BeforereplacingtheCPUboard,resettheunitbyturningthepowerOFFandON whileholdingdownthebackspacekey.Ifthisdoesnotfixtheproblem,continue.

2. **TurnthepowerOFF.Removethepowercordfromthepower entrymodule.**
3. Removetheeightblackscrewswhichsecurethetoplid.Therearefourscrewson eachside,twoatthefrontandtwoattherear.Removethelidbypullingthelid towardsthebackandupwards.
4. SeeFigure8-1tolocatethePowerSupplyboard.MakesurethattheredLEDatthe topedgeoftheboardisOFFbeforeproceeding.Releasethebarwhichsecuresthe boardsinplace.
5. SeeFigure8-1tolocatetheCPUboard(it'snexttothePowerSupplyboard).
6. RemovetheCPUboardbyusingthecardejectorstoreleasetheboardandpullthe boardupandout.
7. IfreplacingtheprogramROM's,removeU301-306carefullyusingachippuller. InstallthenewROMsmakingsuretoplaceeachROMchipinthecorrectsocket,to properlyalignthechip(theindentationonthechipfacesthecenteroftheboard)and toavoiddamagingorbendingthepins.Ifreplacingthethetwohelp ROMs,repeat thisprocedureforU801andU802.
8. Insertthenewboardmakingsuretoalignthe boardedgeswiththeplasticcard guidesbeforepressingtheboardintoplace.Makesurethattheboardisseated completelyinitssocket.

9. Replacethebarwhichsecurestheboardsinplace.
10. Replacethetoplidandrefastentheeightlidscrews.
11. ResettheunitbyturningthepowerONwhileholdingdownthebackspacekey.

ServiceProcedureD2(BatteryCheck)

1. **TurnthepowerOFF.Removethepowercordfromthepower entrymodule.**
2. Removetheeightblackscrewswhichsecurethetoplid.Therearefourscrewson eachside,twoatthefrontandtwoattherear.Removethelidbypullingthelid towardsthebackandupwards.
3. SeeFigure8-1tolocatethePowerSupplyboard.MakesurethattheredLEDatthe topedgeoftheboardisOFFbeforeproceeding.
4. SeeFigure8-1tolocatetheCPUboard(it'snexttothePowerSupplyboard).Use theDVMtomeasurethebatteryvoltageattheBATTtestpointatthetopofthe board.(Therearetwotestpoints,BATTistheonetowardstherear.)Thebattery voltageshouldbeatleast2.7Vrelativetothechassis.Ifthebatteryvoltageislow, thenproceedtoreplacethebattery.
5. ReleasethebarwhichsecurestheboardsinplaceRemovetheCPUboardbyusing thecardejectorstoreleasetheboardandpulltheboardupandout.Desolderthetwo batterypins.Cuttheplastictiewhichsecuresthebatteryandremovethebattery. Insertanewbattery(checkthepolarity!)solderthetwopins.Securethebatterywith anewtieifavailable.
6. ReplacetheCPUboardmakingsuretoalignteboardedgeswiththeplasticcard guidesbeforepressingtheboardintoplace.Makesurethattheboardisseated completelyinitssocket.
7. ResettheunitbyturningthepowerONwhileholdingdownthebackspacekey.Ifthe unitcontinuestohavebatteryproblems,thenfollowProcedureD1toreplacethe CPUboard.

ServiceProcedureD3(Video/IOBoardReplacement)

1. BeforereplacingtheVideo/IOboard,resettheunitbyturningthepowerOFFand ONwhileholdingdownthebackspacekey.Ifthisdoesnotfixtheproblem, continue.

2. **TurnthepowerOFF.Removethepowercordfromthepower entrymodule.**
3. Removetheeightblackscrewswhichsecurethetoplid.Therearefourscrewson eachside,twoatthefrontandtwoattherear.Removethelidbypullingthelid towardsthebackandupwards.
4. SeeFigure8-1tolocatethePowerSupplyboard.MakesurethattheredLEDatthe topedgeoftheboardisOFFbeforeproceeding.Releasethebarwhichsecuresthe boardsinplace.

5. SeeFigure8-1tolocatetheVideo/IOboard(it'sfarthestfromthePowerSupply board).
6. RemovetheVideo/IOboardbyusingthecardejectorstoreleasetheboardandpull theboardupandout.
7. Insertthenewboardmakingsuretoalignteboardedgeswiththeplasticcard guidesbeforepressingtheboardintoplace.Makesurethattheboardisseated completelyinitssocket.
8. Replacethebarwhichsecurestheboardsinplace.
9. Replacethetoplidandrefastentheeightlidscrews.
10. Resettheunitbyturningthepower ONwhileholdingdownthebackspacekey.

ServiceProcedureF1(DSPBoardReplacement)

1. BeforereplacingtheDSPboard,resettheunitbyturningthepowerOFFandON whileholdingdownthebackspacekey.Ifthisdoesnotfixtheproblem,continue.

2. **TurnthepowerOFF.Removethepowercordfromthepower entrymodule.**
3. Removetheeightblackscrewswhichsecurethetoplid.Therearefourscrewson eachside,twoatthefrontandtwoattherear.Removethelidbypullingthelid towardsthebackandupwards.
4. SeeFigure8-1tolocatethePowerSupplyboard.MakesurethattheredLEDatthe topedgeoftheboardisOFFbeforeproceeding.
5. SeeFigure8-2tolocatetheDSPboard(intheAnalyzercardcagenearesttheCRT). Removethecardcagecoverbylooseningthefivescrewsinthecover.
6. RemovetheDSPboardbyusingthecardejectorstoreleasetheboardandpullthe boardupandout.
7. IfreplacingtheDSPROM,removeU715carefullywithachippuller.Insertthenew chipwiththeproperalignment(theindentationfacesup)makingsurenottobendor damagethepins.
8. Insertthenewboardmakingsuretoalignteboardedgeswiththeplasticcard guides.Makesurethattheboardisalignedwiththeconnectorsandjacksatthe bottomofthecardcagebeforepressingtheboardintoplace.Donotpresstheboard inifthejacksatthefrontarenotengagedproperly.**Thesejacksareeasily damaged!**Makesurethattheboardisseatedcompletelyinitssocket.
9. Replacethecardcagecoverandtightenthecoverscrews.
10. Replacethetoplidandrefastentheeightlidscrews.
11. Resettheunitbyturningthepower ONwhileholdingdownthebackspacekey.

ServiceProcedureF2(AnalogBoardReplacement)

1. BeforereplacinganAnalogboard,resettheunitbyturningthepowerOFFandON whileholdingdownthebackspacekey.Ifthisdoesnotfixtheproblem,continue.

2. **TurnthepowerOFF.Removethepowercordfromthepower entrymodule.**
3. Removetheeightblackscrewswhichsecurethetoplid.Therearefourscrewson eachside,twoatthefrontandtwoattherear.Removethelidbypullingthelid towardsthebackandupwards.
4. SeeFigure8-1tolocatethePowerSupplyboard.MakesurethattheredLEDatthe topedgeoftheboardisOFFbeforeproceeding.
5. SeeFigure8-2tolocatetheAnalogboards(intheAnalyzercardcagebehindthe inputBNCconnectors).Removethecardcagecoverbylooseningthefivescrewsin thecover.
6. TheChannel1Analogboardisinthecenterofthecardcage.TheChannel2Analog boardisontheright.Pulloffthesmallshieldatthefrontusingthefingerhole. RemovethecorrectAnalogboardbyusingthecardejectorstoreleasetheboardand pulltheboardupandout.
7. Insertthenewboardmakingsuretoalignteboardedgeswiththeplasticcard guides.Makesurethattheboardisalignedwiththeconnectorsandjacksatthe bottomofthecardcagebeforepressingtheboardintoplace.Donotpresstheboard inifthejacksatthefrontarenotengagedproperly.**Thesejacksareeasily damaged!**Makesurethattheboardisseatedcompletelyinitssocket.
8. Replacethesmallshieldatthefront.Replacethecardcagecoverandtightenthe coverscrews.
9. Replacethetoplidandrefastentheeightlidscrews.
10. Resettheunitbyturningthepower ONwhileholdingdownthebackspacekey.

ServiceProcedureF3(CheckingtheAnalogInputs)

1. Beforeproceeding,resettheunitbyturningthepowerOFFandONwhileholding downthebackspacekey.Ifthisdoesnotfixtheproblem,continue.

2. **TurnthepowerOFF.Removethepowercordfromthepower entrymodule.**
3. Removetheeightblackscrewswhichsecurethetoplid.Therearefourscrewson eachside,twoatthefrontandtwoattherear.Removethelidbypullingthelid towardsthebackandupwards.
4. SeeFigure8-1tolocatethePowerSupplyboard.MakesurethattheredLEDatthe topedgeoftheboardisOFFbeforeproceeding.
5. SeeFigure8-2tolocatetheAnalogboards(intheAnalyzercardcagebehindthe inputBNCconnectors).Removethecardcagecoverbylooseningthefivescrewsin thecover.
6. TheChannel1Analogboardisinthecenterofthecardcage.TheChannel2Analog boardisontheright.Pulloffthesmallshieldatthefrontusingthefingerhole. RemovethecorrectAnalogboardbyusingthecardejectorstoreleasetheboardand pulltheboardupandout.

7. UsetheDVMtoverifythattheAinputBNCcenterconductorandshieldare connectedtothefrontmostSMBjackatthebottomofthecardcage(directlybehind theinputs).TheBNCcenterconductorconnectstothefemalecenteroftheSMB jack.TheBNCshieldconnectstotheSMBshield.UsetheDVMtoverifythattheB inputBNCconnectsproperlytotherearmostSMBjack.IfbothconnectionsareOK, proceedtoProcedureF2toreplacetheAnalogboard.OtherwisecontactSRSfor moreinformation.

ServiceProcedureF4(CheckingtheAmplitude)

1. Checktheamplitudeaccuracybyfollowingtheprocedureoutlinedin Performance Test4(AmplitudeAccuracyandFlatness)inChapter6oftheSR785Operating Manual.Ifthetestpasses,thencheckthesignalsourceinquestion.Ifthetestfails, followProcedureF2toreplaceanAnalogboard.

ServiceProcedureF5(CheckingtheTrigger)

1. InternalTriggercheck:Resettheunitbyholdingdownthebackspacekeywhile turningthepowerON.Usethefunctiongeneratortoapplyaknown10kHz,0.5 VrmssinewavetobothAinputs.Verifythatthesignalappearsinbothspectra(do notchangeanysettings).Inthe[Trigger]menu,settheTriggerModetoAutoArm. SettheTriggerSourcetoCh1andverifythattheTrigindicatorinthedisplayturns on.SettheTriggerSourcetoCh2andverifythattheTrigindicatorturnson.If neithertriggersourceworks,followProcedureF1toreplacetheDSPboard.Ifoneof theinternalsourcesfails,theproblemisprobablywiththeAnalogboardforthat channel.FollowProcedureF2toreplacetheAnalogboard.Ifbothtriggersources areOK,continue.

2. ExternalTriggercheck:Resettheunitbyholdingdownthebackspacekeywhile turningthepowerON.Usethefunctiongeneratortoapplyaknown10kHz,0.5 VrmssinewavetotheCh1Ainput.UseaBNCcabletoconnectthesignaltothe TriggerInputaswell.Verifythatthesignalappearsinthetopspectrum(donot changeanysettings).Inthe[Trigger]menu,settheTriggerModetoAutoArm.Set theTriggerSourcetoExternalandverifythattheTrigindicatorinthedisplayturns on.Iftheunitdoesnottrigger,proceedtostep4.

3. ExternalTTLTriggercheck:Resettheunitbyholdingdownthebackspacekey whileturningthepowerON.Usethefunctiongeneratortoapplyaknown10kHz, 0.5VrmssinewavetotheCh1Ainput.UseaBNCcabletoconnectthefunction generatorTTLSYNCoutputtotheTriggerInputaswell.Verifythatthesignal appearsinthetopspectrum(donotchangeanysettings).Inthe[Trigger]menu,set theTriggerModetoAutoArm.SettheTriggerSourcetoExtTTLandverifythat theTrigindicatorinthedisplayturnson.Iftheunitdoesnottrigger,proceedtostep 4.

4. **TurnthepowerOFF.Removethepowercordfromthepower entrymodule.**

5. Removetheeightblackscrewswhichsecurethetoplid.Therearefourscrewson eachside,twoatthefrontandtwoattherear.Removethelidbypullingthelid towardsthebackandupwards.

6. SeeFigure8-1tolocatethePowerSupplyboard.MakesurethattheredLEDatthe topedgeoftheboardisOFFbeforeproceeding.
7. SeeFigure8-2tolocatetheDSPboard(intheAnalyzercardcageclosesttothe CRT).Removethecardcagecoverbylooseningthefivescrewsinthecover.
8. RemovetheDSPboardbyusingthecardejectorstoreleasetheboardandpullthe boardupandout.
9. UsetheDVMtoverifythattheTriggerInputBNCcenterconductorandshieldare connectedtotherearmostSMBjackatthebottomofthecardcage(directlybehind theTriggerInput).TheBNCcenterconductorconnectstothefemalecenterofthe SMBjack.TheBNCshieldconnectstotheSMBshield.IftheconnectionisOK, followProcedureF1toreplacetheDSPboard.OtherwisecontactSRSformore information.

ServiceProcedureF6(CheckingtheSource)

1. Checkthesourceoutputontheoscilloscope.Resettheunitbyholdingdownthe backspacekeywhileturningthepowerON.ConnecttheSourceOutputtothe oscilloscope.Inthe[Source]menu,chooseSine.A10.24kHz,1.0Vppsinewave shouldbedisplayedontheoscilloscope.Ifnot,continue.

2. **TurnthepowerOFF.Removethepowercordfromthepower entrymodule.**
3. Removetheeightblackscrewswhichsecurethetoplid.Therearefourscrewson eachside,twoatthefrontandtwoattherear.Removethelidbypullingthelid towardsthebackandupwards.
4. SeeFigure8-1tolocatethePowerSupplyboard.MakesurethattheredLEDatthe topedgeoftheboardisOFFbeforeproceeding.
5. SeeFigure8-2tolocatetheDSPboard(intheAnalyzercardcageclosesttothe CRT).Removethecardcagecoverbylooseningthefivescrewsinthecover.
6. RemovetheDSPboardbyusingthecardejectorstoreleasetheboardandpullthe boardupandout.
7. UsetheDVMtoverifythattheSourceOutputBNCcenterconductorandshieldare connectedtothefrontmostSMBjackatthebottomofthecardcage(directlybehind theSourceOutput).TheBNCcenterconductorconnectstothefemalecenterofthe SMBjack.TheBNCshieldconnectstotheSMBshield.IftheconnectionisOK, followProcedureF1toreplacetheDSPboard.Otherwise,contactSRSformore information.

ServiceProcedureF7(DSPMemoryModuleReplacement)

1. Beforereplacingamemorymodule,resettheunitbyturningthepowerOFFandON whileholdingdownthebackspacekey.Ifthisdoesnotfixtheproblem,continue.

2. **TurnthepowerOFF.Removethepowercordfromthepower entrymodule.**

3. Removetheeightblackscrewswhichsecurethetoplid.Therearefourscrewson eachside,twoatthefrontandtwoattherear.Removethelidbypullingthelid towardsthebackandupwards.
4. SeeFigure8-1tolocatethePowerSupplyboard.MakesurethattheredLEDatthe topedgeoftheboardisOFFbeforeproceeding.
5. SeeFigure8-2tolocatetheDSPboard(intheAnalyzercardcagenearesttheCRT). Removethecardcagecoverbylooseningthefivescrewsinthecover.
6. RemovetheDSPboardbyusingthecardejectorstoreleasetheboardandpullthe boardupandout.
7. TherearethreememorySIMMmodulesontheDSPboard.TheyaretheDRAM, DataMemoryandProgramMemory.TheDataandProgrammodulesareSRS custompartsandmustbereplacedwithSRSsuppliedparts.ThestandardDRAM bufferisa2Mx32,70ns(orfaster),72pinSIMM.

   TheDRAMupgradesare4Mx32and8Mx32,70ns(orfaster),72pinSIMM's.The DRAMmodulemusthaveitsidentificationpin(s)groundedinordertoworkinthe SR785.Thesepinsarestandardinallmodulesbutmaynotbeconnectedinmodules notsuppliedbySRS.Checkthedatasheetforthemoduletoensurethatthecorrect IDpinsareconnected.
8. Toremoveamemorymodule,simplyreleasethespringlatchesateachendofthe socket.
9. Insertthenewmodule,makingsurethatthenotchendiscorrectlypositioned.Make surethatthespringlatchesareengagedaroundtheedgeoftheboard.
10. ReplacetheDSPboardmakingsuretoalignheboardedgeswiththeplasticcard guides.Makesurethattheboardisalignedwiththeconnectorsandjacksatthe bottomofthecardcagebeforepressingtheboardintoplace.Donotpresstheboard inifthejacksatthefrontarenotengagedproperly.**Thesejacksareeasily damaged!**Makesurethattheboardisseatedcompletelyinitssocket.
11. Replacethecardcagecoverandtightenthecoverscrews.
12. Replacethetoplidandrefastentheeightlidscrews.
13. ResettheunitbyturningthepowerONwhileholdingdownthebackspacekey.

ServiceProcedureG1(ReplacingtheDiskDrive)

1. **TurnthepowerOFF.Removethepowercordfromthepower entrymodule.**
2. Removetheeightblackscrewswhichsecurethetoplid.Therearefourscrewson eachside,twoatthefrontandtwoattherear.Removethelidbypullingthelid towardsthebackandupwards.
3. Removethetwohexscrewswhichconnectthehandlearmstothechassis.Remove thehandlebypullingthearmsapartslightly.
4. Removetheeightscrewswhichsecurethefrontpanelbezeltothechassis.These screwsareexposedwhenthelidisremoved.Therearetwoscrewsalongeachside andthetopandbottom.

5. Removethefrontpanelbezelbypullingitslowlyofftowardsthefront.Thekeypad isattachedtothebezel.Thereisagroundwireandcableextendingfromthekeypad backtothemainchassis.
6. ThekeypadandknobareattachedtotheDiskcardbyaribboncable.Thiscable attachesnexttotheKeyboardconnectorbelowtheCRT.Notethecableorientation andremovethecablefromtheDiskcard.
7. PulltheDiskcardstraightouttoremoveit.
8. InsertthenewDiskcard.Makesurethatthecardisintheplasticcardguidesunder theCRT.Donotforcethecardinifthecardisnotintheguides.Pushthecardin untiltheconnectorissecure.
9. ReattachthekeypadcabletotheDiskcard.
10. Replacethefrontpanelbezel,beingcarefultoengagetheslotswhichsecurethe frontoftheDiskcard.
11. Replacetheeightbezelscrews.Replacethehandleandthepivotscrews.
12. Replacethetoplidandrefastentheeightlidscrews.
13. Replacethepowercord.Resettheunitbyturningthepower ONwhileholdingdown thebackspacekey.RuntheDisktestinthe[System]<Diagnostics>menu.

ServiceProcedureJ1(AdjustingtheDCOffsetandCMR)

1. TheDCOffsetandCMRadjustmentsaffecteachotherandmustbedonetogether. Thisprocedurerequiresa50 Ωterminator.Asmall(butlong)slottedscrewdriveris requiredtoadjustthepotentiometers.

2. ResettheunitbyturningthepowerONwhileholdingdownthebackspacekey.Letit warmupforatleastanhour.

   Theadjustmentprocedureforthetwochannelsisthesame.Theproceduredescribed belowusesChannel1astheexample.ToadjustChannel2,press[ActiveDisplay]to switchtoDisplayB(SpectrumofCh2)andwhennecessary,adjusttheCh2input parametersinthe[Input]menuandmaketheinputconnectionstotheCh2AandB inputs.Press[AutoScaleB]insteadof[AutoScaleA]whennecessary.

3. Removetheeightblackscrewswhichsecurethetoplid.Therearefourscrewson eachside,twoatthefrontandtwoattherear.Removethelidbypullingthelid towardsthebackandupwards.Removethecardcagecoverbylooseningthefive screwswhichsecureit.

4. TheadjustmentpotsontheAnalogboardaretowardsthefront.Removethesmall shieldcoveratthefrontoftheAnalogboard.Simplypulltheshieldupusingthe fingerhole.

5. Thefiveadjustmentpotsareshowninfigure8-3.Donotmakeanyother adjustments!

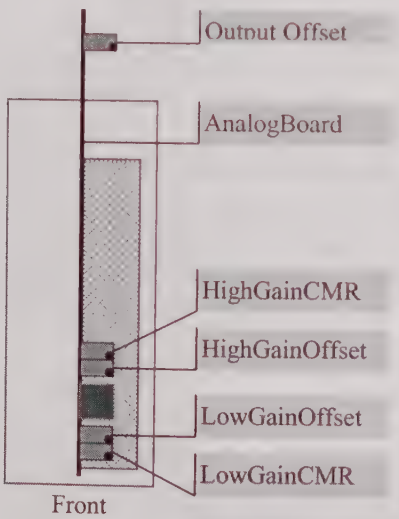


Figure8-3AnalogAdjustments

6. Pressthefollowingkeystocleartheinternaloffsetcalibrationsandturn AutoOffset Off.

   [System]
   <Diagnostics >
   <KillAutoOff>

7. Pressthefollowingkeystosettheinputconfigurationandfrequencyspan.

   [Input]
   <InputConfig>
   <Channel>
   Select(Ch1) (Ch2) [Enter]
   <Ch1InputRange> (<Ch2 Input Range>)
   [0][Enter]
   <Ch1Grounding> (<Ch2 Grounding>)
   Select(Ground)[Enter]
   <Ch1Coupling> (<Ch1 Coupling>)
   Select(DC)[Enter]

   [Freq]
   <Span>
   [1][.][6]Select(kHz)[Enter]
   <StartFreq.>
   [0][Enter]

   [Marker]
   <Width>
   [Link]Select(Spot)[Enter]

8. Connecta50 ΩterminationtotheCh1 (Ch2)Ainput.Thisshortstheinputtoground sotheanalyzer'sownDCoffsetismeasured.

   Rotatetheknobsothatthemarkerisat0Hz.Themarkerpositionsdisplayabovethe graphshouldread0Hz.ThemarkeramplitudeistheDCoffset.

   Ifthemarkerreadingislessthan-50dBV(remember,-40dBVisgreaterthan-50dBVand-60dBVislessthan-50dBV)thenproceedtothenextstep.Ifthe readingisgreaterthan-50dBV,adjustthe **OutputOffset**pottominimizethe markerreading(seeFig8-3).

9. Press

   [Input]
   <InputConfig>
   <Channel>
   Select(Ch1) (Ch2) [Enter]
   <Ch1InputRange> (<Ch2 Input Range>)
   [-][2][0][Enter]

   [AutoScaleA] [Auto Scale B]

   Ifthemarkerreadingislessthan-70dBV(remember,-60dBVisgreaterthan -70dBVand-80dBVislessthan-70dBV)thenproceedtothenextstep.Ifthe readingisgreaterthan-70dBV,adjustthe **HighGainOffset**pottominimizethe markerreading(seeFig8-3).

10. Press

    [Input]
    <InputConfig>
    <Channel>
    Select(Ch1) (Ch2) [Enter]
    <Ch1InputRange> (<Ch2 Input Range>)
    [-][5][0][Enter]

    [AutoScaleA] [Auto Scale B]

    Ifthemarkerreadingislessthan-85dBV(remember,-80dBVisgreaterthan -85dBVand-90dBVislessthan-85dBV)thenproceedtothenextstep.Ifthe readingisgreaterthan-85dBV,adjusttheHighGainOffsetpottominimizethe markerreading(seeFig8-3).

11. Press

    [Input]
    <InputConfig>
    <Channel>
    Select(Ch1) (Ch2) [Enter]
    <Ch1InputRange> (<Ch2 Input Range>)
    [0][Enter]

    [AutoScaleA] [Auto Scale B]

    Ifthemarkerreadingislessthan-50dBV(remember,-40dBVisgreaterthan -50dBVand-60dBVislessthan-50dBV)thenproceedtothenextstep.Ifthe readingisgreaterthan-50dBV,adjusttheLowGainOffsetpottominimizethe markerreading(seeFig8-3).

12. ConnecttheSourceOutputtoboththeCh1AandBinputs (Ch2 A and B).Use equallengthcablesfromAandBtoaBNCTEE.ConnectthecablefromtheSource OutputtotheTEE.

    Press

    [Source]
    <On>
    <Sine>
    <Frequency1>
    [1][.][0][2][4]Select(kHz)[Enter]

    [Input]
    <InputConfig>
    <Channel>
    Select(Ch1) (Ch2) [Enter]
    <Ch1InputRange> (<Ch2 Input Range>)
    [-][2][Enter]

    [AutoScaleA] [Auto Scale B]

    Usetheknobtomovethemarkerto1.024kHz.Theamplitudeshouldbe -6dBV.

    [MarkerRef]{Markernowreadsrelativetothesignalamplitude}

[Input]
<InputConfig>
<Channel>
Select(Ch1) (Ch2) [Enter]
<Ch1InputMode> <Ch2 Input Mode>
Select(A-B)[Enter]

Donotmovethemarker.Themarkerreadingisthecommonmoderejectionration (CMRR).Ifthereadingisbelow-100dB,thendonotmakeanyadjustment.Ifthe readingisabove-100dB,thenadjustthe **HighGainCMR** pottominimizethe reading(seeFig8-3).

13. Press

[Input]
<InputConfig>
<Channel>
Select(Ch1) (Ch2) [Enter]
<Ch1InputRange> (<Ch2 Input Range>)
[0][Enter]
<Ch1InputMode> <Ch2 Input Mode>
Select(A)[Enter]

[AutoScaleA] [Auto Scale B]

[MarkerRef]{Markernowreadsabsolutesignalamplitude}

Usetheknobtomovethemarkerto1.024kHz.Theamplitudeshouldbe -6dBV.

[MarkerRef]{Markernowreadsrelativetothesignalamplitude}

[Input]
<InputConfig>
<Channel>
Select(Ch1) (Ch2) [Enter]
<Ch1InputMode> <Ch2 Input Mode>
Select(A-B)[Enter]

Donotmovethemarker.Themarkerreadingisthecommonmoderejectionration (CMRR).Ifthereadingisbelow-80dB,thendonotmakeanyadjustment.Ifthe readingisabove-80dB,thenadjustthe**LowGainCMR** pottominimizethe reading(seeFig8-3).

14.RemovethecablesfromtheAandBinputs.Connecta50 ΩterminationtotheCh1 (Ch2)Ainput.Thisshortstheinputtogroundsotheanalyzer'sownDCoffsetis measured.

[Input]
<InputConfig>
<Channel>
Select(Ch1) (Ch2) [Enter]
<Ch1InputRange> (<Ch2 Input Range>)
[-][5][0][Enter]

<Ch1InputMode> <Ch2 Input Mode>
Select(A)[Enter]

[MarkerRef]{Markernowreadsabsolutesignalamplitude}

Usetheknobtomovethemarkerto0Hz.Themarkerpositionshould display0Hz.ThemarkerreadingistheDCoffset.

[AutoScaleA] [Auto Scale B]

Ifthemarkerreadingislessthan-85dBV(remember,-80dBVisgreaterthan -85dBVand-90dBVislessthan-85dBV)thenproceedtothenextstep.Ifthe readingisgreaterthan-85dBV,adjusttheHighGainOffsetpottominimizethe markerreading(seeFig8-3).

15.Press

[Input]
<InputConfig>
<Channel>
Select(Ch1) (Ch2) [Enter]
<Ch1InputRange> (<Ch2 Input Range>)
[0][Enter]

[AutoScaleA] [Auto Scale B]

Ifthemarkerreadingislessthan-50dBV(remember,-40dBVisgreaterthan -50dBVand-60dBVislessthan-50dBV)thenproceedtothenextstep.Ifthe readingisgreaterthan-50dBV,adjusttheLowGainOffsetpottominimizethe markerreading(seeFig8-3).

16. Thiscompletestheadjustmentprocedure.

17 Replacethesmallshieldatthefront.Replacethecardcagecoverandtightenthe coverscrews.

18. Replacethetoplidandrefastentheeightlidscrews.

19. ResettheunitbyturningthepowerONwhileholdingdownthebackspacekey.Ifthe DCoffsetorCommonModeRejectionarestillaproblem,repeatthisprocedureone moretime.Otherwise,followProcedureF2toreplacetheAnalogboard.

Chapter4

PartsLists

Thischapterliststhecomponentsonthemajorcircuitassembliesin theSR785.Theschematicsforeach boardareshowninChapter5.

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CPUBoardPartsList

ThissectioncoversschematicsMCPU-1throughMCPU-9inChapter5.

CPUBoardAssembly			
RefNo.	SRSPartNo.	Value	ComponentDescription
BT701	6-00001-612	BR-2/3A2PINPC	Batter y
C101	5-00134-529	100P	Cap,MonolythicCeramic,50V,20%,Z5U
C102	5-00134-529	100P	Cap,MonolythicCeramic,50V,20%,Z5U
C401	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C602	5-00012-501	330P	Capacitor,CeramicDisc,50V,10%,SL
C603	5-00012-501	330P	Capacitor,CeramicDisc,50V,10%,SL
C701	5-00064-513	.0047U	Capacitor,Mylar/Poly,50V,5%,Rad
C704	5-00012-501	330P	Capacitor,CeramicDisc,50V,10%,SL
C705	5-00012-501	330P	Capacitor,CeramicDisc,50V,10%,SL
C706	5-00022-501	.001U	Capacitor,CeramicDisc,50V,10%,SL
C901	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C902	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C903	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C904	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C905	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C906	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C907	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C908	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C909	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C910	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C911	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C912	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C913	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C914	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C915	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C916	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C917	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C918	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C919	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C920	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C921	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C922	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C923	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C924	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C925	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C926	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C927	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C928	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C929	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C930	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C931	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C932	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C933	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C934	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C935	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C936	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C937	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C938	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C939	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C950	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C951	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad

CPUBoardAssembly

RefNo.	SRSPartNo.	Value	Component Description
C952	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C953	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C954	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C955	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C956	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C957	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C958	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C959	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C970	5-00038-509	10U	Capacitor,Electrolytic,50V,20%,Rad
C971	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C972	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
D601	3-00004-301	1N4148	Diode
D602	3-00004-301	1N4148	Diode
D603	3-00004-301	1N4148	Diode
D604	3-00004-301	1N4148	Diode
D605	3-00004-301	1N4148	Diode
D606	3-00004-301	1N4148	Diode
D607	3-00004-301	1N4148	Diode
D608	3-00004-301	1N4148	Diode
D702	3-00004-301	1N4148	Diode
D703	3-00004-301	1N4148	Diode
D704	3-00004-301	1N4148	Diode
D705	3-00004-301	1N4148	Diode
J901	1-00236-109	120PINRTANGL	DINConnector,Male
N101	4-00707-425	2.2KX7	ResistorNetworkSIP1/4W2%(Common)
N201	4-00852-420	82X8	ResistorNetwork,DIP,1/4W,2%,8Ind
N202	4-00852-420	82X8	ResistorNetwork,DIP,1/4W,2%,8Ind
N203	4-00852-420	82X8	ResistorNetwork,DIP,1/4W,2%,8Ind
N204	4-00707-425	2.2KX7	ResistorNetworkSIP1/4W2%(Common)
N205	4-00422-421	82X5	Res.Network,SIP,1/4W,2%(Isolated)
N501	4-00261-425	2.2KX9	ResistorNetworkSIP1/4W2%(Common)
N601	4-00261-425	2.2KX9	ResistorNetworkSIP1/4W2%(Common)
N602	4-00220-420	10KX8	ResistorNetwork,DIP,1/4W,2%,8Ind
N603	4-00244-421	10KX4	Res.Network,SIP,1/4W,2%(Isolated)
N701	4-00856-421	1.0KX5	Res.Network,SIP,1/4W,2%(Isolated)
PC1	7-00522-701	MEGAPLATCPU	PrintedCircuitBoard
Q701	3-00022-325	2N3906	Transistor,TO-92Package
Q705	3-00022-325	2N3906	Transistor,TO-92Package
R201	4-00065-401	3.3K	Resistor,CarbonFilm,1/4W,5%
R202	4-00065-401	3.3K	Resistor,CarbonFilm,1/4W,5%
R502	4-00065-401	3.3K	Resistor,CarbonFilm,1/4W,5%
R707	4-00065-401	3.3K	Resistor,CarbonFilm,1/4W,5%
R710	4-00080-401	47	Resistor,CarbonFilm,1/4W,5%
R711	4-00080-401	47	Resistor,CarbonFilm,1/4W,5%
R712	4-00021-401	1.0K	Resistor,CarbonFilm,1/4W,5%
R713	4-00080-401	47	Resistor,CarbonFilm,1/4W,5%
R714	4-00021-401	1.0K	Resistor,CarbonFilm,1/4W,5%
R716	4-00054-401	200K	Resistor,CarbonFilm,1/4W,5%
SO101	1-00108-150	PLCC68TH	Socket,THRU-HOLE
SO301	1-00156-150	32PIN600MIL	Socket,THRU-HOLE
SO302	1-00156-150	32PIN600MIL	Socket,THRU-HOLE
SO303	1-00156-150	32PIN600MIL	Socket,THRU-HOLE
SO304	1-00156-150	32PIN600MIL	Socket,THRU-HOLE
SO305	1-00156-150	32PIN600MIL	Socket,THRU-HOLE
SO306	1-00156-150	32PIN600MIL	Socket,THRU-HOLE
SO801	1-00156-150	32PIN600MIL	Socket,THRU-HOLE
SO802	1-00156-150	32PIN600MIL	Socket,THRU-HOLE

CPUBoardAssembly			
RefNo.	SRSPartNo.	Value	Com ponentDescri ption
TP701	1-00143-101	TESTJACK	VerticalTestJack
TP702	1-00143-101	TESTJACK	VerticalTestJack
U101	3-00595-360	80C186-20	IntegratedCircuit(Surf aceMountPkg)
U102	3-00591-340	74ACT04	IntegratedCircuit(Thru-holePkg)
U103	6-00147-621	40.000MHZ	CrystalOscillator
U201	3-00585-340	74ACT573	IntegratedCircuit(Thru-holePkg)
U202	3-00585-340	74ACT573	IntegratedCircuit(Thru-holePkg)
U203	3-00585-340	74ACT573	IntegratedCircuit(Thru-holePkg)
U204	3-00586-340	74ACT245	IntegratedCircuit(Thru-holePkg)
U205	3-00586-340	74ACT245	IntegratedCircuit(Thru-holePkg)
U206	3-00586-340	74ACT245	IntegratedCircuit(Thru-holePkg)
U207	3-00586-340	74ACT245	IntegratedCircuit(Thru-holePkg)
U208	3-00585-340	74ACT573	IntegratedCircuit(Thru-holePkg)
U209	3-00586-340	74ACT245	IntegratedCircuit(Thru-holePkg)
U210	3-00586-340	74ACT245	IntegratedCircuit(Thru-holePkg)
U211	3-00587-340	74ACT32	IntegratedCircuit(Thru-holePkg)
U212	3-00588-340	74ACT08	IntegratedCircuit(Thru-holePkg)
U213	3-00693-343	SR780U213	GAL/PAL,I.C.
U214	3-00692-343	SR780U214	GAL/PAL,I.C.
U216	3-00587-340	74ACT32	IntegratedCircuit(Thru-holePkg)
U401	3-00551-341	128KX8-70	STATICRAM,I.C.
U402	3-00551-341	128KX8-70	STATICRAM,I.C.
U403	3-00551-341	128KX8-70	STATICRAM,I.C.
U404	3-00551-341	128KX8-70	STATICRAM,I.C.
U501	3-00342-340	74ALS138	IntegratedCircuit(Thru-holePkg)
U503	3-00342-340	74ALS138	IntegratedCircuit(Thru-holePkg)
U504	3-00274-340	74AC74	IntegratedCircuit(Thru-holePkg)
U505	3-00347-340	74LS148	IntegratedCircuit(Thru-holePkg)
U506	3-00440-340	74HC573	IntegratedCircuit(Thru-holePkg)
U507	3-00043-340	74HC21	IntegratedCircuit(Thru-holePkg)
U508	3-00303-340	74HC164	IntegratedCircuit(Thru-holePkg)
U601	3-00467-340	74HCT74	IntegratedCircuit(Thru-holePkg)
U603	3-00265-340	74HC595	IntegratedCircuit(Thru-holePkg)
U606	3-00440-340	74HC573	IntegratedCircuit(Thru-holePkg)
U607	3-00454-340	74HC574	IntegratedCircuit(Thru-holePkg)
U608	3-00440-340	74HC573	IntegratedCircuit(Thru-holePkg)
U609	3-00411-340	74HC273	IntegratedCircuit(Thru-holePkg)
U610	3-00467-340	74HCT74	IntegratedCircuit(Thru-holePkg)
U611	3-00467-340	74HCT74	IntegratedCircuit(Thru-holePkg)
U612	3-00039-340	74HC14	IntegratedCircuit(Thru-holePkg)
U701	3-00594-340	MAX693A	IntegratedCircuit(Thru-holePkg)
U702	3-00900-340	DS12C887	IntegratedCircuit(Thru-holePkg)
U703	3-00046-340	74HC374	IntegratedCircuit(Thru-holePkg)
U704	3-00263-340	DS75451N	IntegratedCircuit(Thru-holePkg)
U705	3-00039-340	74HC14	IntegratedCircuit(Thru-holePkg)
Z0	0-00089-033	4"	Tie
Z0	0-00373-000	CARDEJECTOR	Hardware,Misc.

Video/IOBoardPartsList

ThissectioncoversschematicsMVID-10throughMVID-14inChapter5.

Video/IOBoardAssembly			
RefNo.	SRSPartNo.	Value	ComponentDescription
C1101	5-00134-529	100P	Cap,MonolythicCeramic,50V,20%,Z5U
C1102	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C1103	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C1105	5-00134-529	100P	Cap,MonolythicCeramic,50V,20%,Z5U
C1106	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C1107	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C1108	5-00218-529	120P	Cap,MonolythicCeramic,50V,20%,Z5U
C1109	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C1110	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C1201	5-00003-501	10P	Capacitor,CeramicDisc,50V,10%,SL
C1202	5-00003-501	10P	Capacitor,CeramicDisc,50V,10%,SL
C1203	5-00022-501	.001U	Capacitor,CeramicDisc,50V,10%,SL
C1204	5-00316-512	.027U	Cap,StackedMetalFilm50V5%-40/+85c
C1205	5-00054-512	.047U	Cap,StackedMetalFilm50V5%-40/+85c
C1206	5-00022-501	.001U	Capacitor,CeramicDisc,50V,10%,SL
C1303	5-00012-501	330P	Capacitor,CeramicDisc,50V,10%,SL
C1304	5-00012-501	330P	Capacitor,CeramicDisc,50V,10%,SL
C1305	5-00178-501	62P	Capacitor,CeramicDisc,50V,10%,SL
C1306	5-00178-501	62P	Capacitor,CeramicDisc,50V,10%,SL
C1401	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C1402	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C1403	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C1404	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C1405	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C1406	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C1407	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C1408	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C1409	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C1410	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C1411	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C1412	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C1413	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C1414	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C1415	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C1416	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C1417	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C1418	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C1419	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C1420	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C1440	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C1441	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C1442	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C1445	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C1446	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C1447	5-00262-548	.01UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C1450	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C1451	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C1452	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C1453	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C1454	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
J1401	1-00236-109	120PINRTANGL	DINConnector,Male

Video/IOBoardAssembly

RefNo.	SRSPartNo.	Value	ComponentDescription
N1001	4-00334-425	10KX5	ResistorNetworkSIP1/4W2% (Common)
N1101	4-00284-421	1.0KX4	Res.Network,SIP,1/4W,2%(Isolated)
N1102	4-00863-421	1.2KX4	Res.Network,SIP,1/4W,2%(Isolated)
N1201	4-00221-425	150X5	ResistorNetworkSIP1/4W2%(Common)
PC1	7-00523-701	MEGAVIDEO	PrintedCircuitBoard
Q1001	3-00021-325	2N3904	Transistor,TO-92Package
Q1002	3-00022-325	2N3906	Transistor,TO-92Package
Q1101	3-00022-325	2N3906	Transistor,TO-92Package
Q1102	3-00022-325	2N3906	Transistor,TO-92Package
Q1103	3-00022-325	2N3906	Transistor,TO-92Package
Q1104	3-00022-325	2N3906	Transistor,TO-92Package
Q1105	3-00022-325	2N3906	Transistor,TO-92Package
Q1106	3-00022-325	2N3906	Transistor,TO-92Package
R1001	4-00088-401	51K	Resistor,CarbonFilm,1/4W,5%
R1002	4-00034-401	10K	Resistor,CarbonFilm,1/4W,5%
R1003	4-00021-401	1.0K	Resistor,CarbonFilm,1/4W,5%
R1004	4-00785-402	100	Resistor,CarbonComp,1/2W,5%
R1101	4-00472-407	806	Resistor,MetalFilm,1/8W,1%,50PPM
R1102	4-00080-401	47	Resistor,CarbonFilm,1/4W,5%
R1103	4-00165-407	200	Resistor,MetalFilm,1/8W,1%,50PPM
R1104	4-00165-407	200	Resistor,MetalFilm,1/8W,1%,50PPM
R1105	4-00472-407	806	Resistor,MetalFilm,1/8W,1%,50PPM
R1106	4-00141-407	100	Resistor,MetalFilm,1/8W,1%,50PPM
R1107	4-00215-407	909	Resistor,MetalFilm,1/8W,1%,50PPM
R1108	4-00027-401	1.5K	Resistor,CarbonFilm,1/4W,5%
R1109	4-00472-407	806	Resistor,MetalFilm,1/8W,1%,50PPM
R1110	4-00080-401	47	Resistor,CarbonFilm,1/4W,5%
R1111	4-00165-407	200	Resistor,MetalFilm,1/8W,1%,50PPM
R1112	4-00472-407	806	Resistor,MetalFilm,1/8W,1%,50PPM
R1113	4-00165-407	200	Resistor,MetalFilm,1/8W,1%,50PPM
R1114	4-00141-407	100	Resistor,MetalFilm,1/8W,1%,50PPM
R1115	4-00215-407	909	Resistor,MetalFilm,1/8W,1%,50PPM
R1116	4-00027-401	1.5K	Resistor,CarbonFilm,1/4W,5%
R1117	4-00041-401	150	Resistor,CarbonFilm,1/4W,5%
R1201	4-00273-401	5.6K	Resistor,CarbonFilm,1/4W,5%
R1202	4-00034-401	10K	Resistor,CarbonFilm,1/4W,5%
R1204	4-00090-401	560	Resistor,CarbonFilm,1/4W,5%
R1205	4-00090-401	560	Resistor,CarbonFilm,1/4W,5%
R1301	4-00022-401	1.0M	Resistor,CarbonFilm,1/4W,5%
R1302	4-00062-401	270	Resistor,CarbonFilm,1/4W,5%
R1303	4-00034-401	10K	Resistor,CarbonFilm,1/4W,5%
R1304	4-00084-401	5.1K	Resistor,CarbonFilm,1/4W,5%
SO1201	1-00232-150	52PLCCTH	Socket,THRU-HOLE
TP2	1-00143-101	TESTJACK	VerticalTestJack
TP101	1-00143-101	TESTJACK	VerticalTestJack
TP102	1-00143-101	TESTJACK	VerticalTestJack
TP103	1-00143-101	TESTJACK	VerticalTestJack
TP104	1-00143-101	TESTJACK	VerticalTestJack
TP105	1-00143-101	TESTJACK	VerticalTestJack
TP106	1-00143-101	TESTJACK	VerticalTestJack
U1001	6-00178-621	19.590MHZ	CrystalOscillator
U1002	3-00274-340	74AC74	IntegratedCircuit(Thru-holePkg)
U1003	3-00598-340	63484P-98	IntegratedCircuit(Thru-holePkg)
U1004	3-00585-340	74ACT573	IntegratedCircuit(Thru-holePkg)
U1005	3-00585-340	74ACT573	IntegratedCircuit(Thru-holePkg)
U1006	3-00551-341	128KX8-70	STATICRAM,I.C.
U1007	3-00551-341	128KX8-70	STATICRAM,I.C.

Video/IOBoardAssembly			
RefNo.	SRSPartNo.	Value	Com ponentDescri ption
U1008	3-00592-340	74ACT299	Inte gratedCircuit (Thru-holePk g)
U1009	3-00592-340	74ACT299	IntegratedCircuit(Thru-holePkg)
U1010	3-00592-340	74ACT299	IntegratedCircuit(Thru-holePkg)
U1011	3-00592-340	74ACT299	IntegratedCircuit(Thru-holePkg)
U1012	3-00277-340	74HC11	IntegratedCircuit(Thru-holePkg)
U1013	3-00274-340	74AC74	IntegratedCircuit(Thru-holePkg)
U1014	3-00274-340	74AC74	IntegratedCircuit(Thru-holePkg)
U1016	3-00591-340	74ACT04	IntegratedCircuit(Thru-holePkg)
U1017	3-00588-340	74ACT08	IntegratedCircuit(Thru-holePkg)
U1101	3-00241-340	AD7528JN	IntegratedCircuit(Thru-holePkg)
U1102	3-00087-340	LF347	IntegratedCircuit(Thru-holePkg)
U1103	3-00122-325	79L05	Transistor,TO-92Package
U1201	3-00596-360	DP8473AV	IntegratedCircuit(Surf aceMountPkg)
U1202	3-00645-340	NAT9914BPD	IntegratedCircuit(Thru-holePkg)
U1203	3-00078-340	DS75160A	IntegratedCircuit(Thru-holePkg)
U1204	3-00079-340	DS75161A	IntegratedCircuit(Thru-holePkg)
U1301	3-00051-340	74HCU04	IntegratedCircuit(Thru-holePkg)
U1303	3-00247-340	SCN2641	IntegratedCircuit(Thru-holePkg)
U1304	3-00110-340	MC1489	IntegratedCircuit(Thru-holePkg)
U1305	3-00109-340	MC1488	IntegratedCircuit(Thru-holePkg)
U1401	3-00342-340	74ALS138	IntegratedCircuit(Thru-holePkg)
U1402	3-00342-340	74ALS138	IntegratedCircuit(Thru-holePkg)
X1201	6-00068-620	24.000MHZ	Crystal
X1301	6-00037-620	3.6864MHZ	Crystal
Z0	0-00373-000	CARDEJECTOR	Hardware,Misc.

PowerSupplyBoardPartsList

ThissectioncoversschematicsMPWR-1throughMPWR-2inChapter5.

PowerSupplyBoardAssembly			
RefNo.	SRSPartNo.	Value	Com ponentDescri ption
C1	5-00134-529	100P	Ca p,Monol ythicCeramic,50V,20%,Z5U
C2	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C3	5-00022-501	.001U	Capacitor,CeramicDisc,50V,10%,SL
C4	5-00134-529	100P	Cap,MonolythicCeramic,50V,20%,Z5U
C5	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C6	5-00022-501	.001U	Capacitor,CeramicDisc,50V,10%,SL
C10	5-00124-526	5600U	Capacitor,Electrolytic,35V,20%,Rad
C11	5-00124-526	5600U	Capacitor,Electrolytic,35V,20%,Rad
C12	5-00127-524	2.2U	Capacitor,Tantalum,50V,20%,Rad
C13	5-00127-524	2.2U	Capacitor,Tantalum,50V,20%,Rad
C14	5-00127-524	2.2U	Capacitor,Tantalum,50V,20%,Rad
C15	5-00127-524	2.2U	Capacitor,Tantalum,50V,20%,Rad
C20	5-00124-526	5600U	Capacitor,Electrolytic,35V,20%,Rad
C21	5-00124-526	5600U	Capacitor,Electrolytic,35V,20%,Rad
C22	5-00127-524	2.2U	Capacitor,Tantalum,50V,20%,Rad
C23	5-00127-524	2.2U	Capacitor,Tantalum,50V,20%,Rad
C24	5-00127-524	2.2U	Capacitor,Tantalum,50V,20%,Rad
C25	5-00127-524	2.2U	Capacitor,Tantalum,50V,20%,Rad
C30	5-00041-509	220U	Capacitor,Electrolytic,50V,20%,Rad
C31	5-00127-524	2.2U	Capacitor,Tantalum,50V,20%,Rad
C32	5-00127-524	2.2U	Capacitor,Tantalum,50V,20%,Rad
C40	5-00041-509	220U	Capacitor,Electrolytic,50V,20%,Rad
C41	5-00127-524	2.2U	Capacitor,Tantalum,50V,20%,Rad
C42	5-00127-524	2.2U	Capacitor,Tantalum,50V,20%,Rad
C50	5-00127-524	2.2U	Capacitor,Tantalum,50V,20%,Rad
C51	5-00127-524	2.2U	Capacitor,Tantalum,50V,20%,Rad
C52	5-00127-524	2.2U	Capacitor,Tantalum,50V,20%,Rad
C53	5-00127-524	2.2U	Capacitor,Tantalum,50V,20%,Rad
D1	3-00479-301	MUR410	Diode
D2	3-00479-301	MUR410	Diode
D3	3-00479-301	MUR410	Diode
D4	3-00479-301	MUR410	Diode
D5	3-00479-301	MUR410	Diode
D6	3-00479-301	MUR410	Diode
D7	3-00479-301	MUR410	Diode
D8	3-00479-301	MUR410	Diode
D9	3-00004-301	1N4148	Diode
D10	3-00004-301	1N4148	Diode
D11	3-00004-301	1N4148	Diode
D12	3-00004-301	1N4148	Diode
D13	3-00011-303	RED	LED,T1Package
D14	3-00004-301	1N4148	Diode
D15	3-00004-301	1N4148	Diode
D16	3-00004-301	1N4148	Diode
D17	3-00004-301	1N4148	Diode
JP1	1-00236-109	120PINRTANGL	DINConnector,Male
JP2	1-00039-116	5PIN,WHITE	Header,Amp,MTA-156
JP3	1-00114-116	10PIN,WHITE	Header,Amp,MTA-156
N1	4-00244-421	10KX4	Res.Network,SIP,1/4W,2%(Isolated)
PC1	7-00526-701	SR780-P/S	PrintedCircuitBoard
R10	4-00618-402	2.2K	Resistor,CarbonComp,1/2W,5%

PowerSupplyBoardAssembly			
RefNo.	SRSPartNo.	Value	Com ponentDescri ption
R11	4-00618-402	2.2K	Resistor,CarbonCom p,1/2W,5%
R12	4-00522-407	243	Resistor,MetalFilm,1/8W,1%,50PPM
R13	4-00444-407	3.65K	Resistor,MetalFilm,1/8W,1%,50PPM
R14	4-00522-407	243	Resistor,MetalFilm,1/8W,1%,50PPM
R15	4-00444-407	3.65K	Resistor,MetalFilm,1/8W,1%,50PPM
R20	4-00618-402	2.2K	Resistor,CarbonComp,1/2W,5%
R21	4-00618-402	2.2K	Resistor,CarbonComp,1/2W,5%
R22	4-00522-407	243	Resistor,MetalFilm,1/8W,1%,50PPM
R23	4-00444-407	3.65K	Resistor,MetalFilm,1/8W,1%,50PPM
R24	4-00522-407	243	Resistor,MetalFilm,1/8W,1%,50PPM
R25	4-00444-407	3.65K	Resistor,MetalFilm,1/8W,1%,50PPM
R31	4-00034-401	10K	Resistor,CarbonFilm,1/4W,5%
R32	4-00522-407	243	Resistor,MetalFilm,1/8W,1%,50PPM
R33	4-00705-407	5.62K	Resistor,MetalFilm,1/8W,1%,50PPM
R41	4-00034-401	10K	Resistor,CarbonFilm,1/4W,5%
R42	4-00522-407	243	Resistor,MetalFilm,1/8W,1%,50PPM
R43	4-00705-407	5.62K	Resistor,MetalFilm,1/8W,1%,50PPM
TP1	1-00143-101	TESTJACK	VerticalTestJack
TP2	1-00143-101	TESTJACK	VerticalTestJack
TP3	1-00143-101	TESTJACK	VerticalTestJack
TP4	1-00143-101	TESTJACK	VerticalTestJack
TP5	1-00143-101	TESTJACK	VerticalTestJack
TP10	1-00143-101	TESTJACK	VerticalTestJack
TP11	1-00143-101	TESTJACK	VerticalTestJack
TP12	1-00143-101	TESTJACK	VerticalTestJack
TP13	1-00143-101	TESTJACK	VerticalTestJack
TP14	1-00143-101	TESTJACK	VerticalTestJack
TP15	1-00143-101	TESTJACK	VerticalTestJack
TP16	1-00143-101	TESTJACK	VerticalTestJack
TP17	1-00143-101	TESTJACK	VerticalTestJack
TP18	1-00143-101	TESTJACK	VerticalTestJack
TP19	1-00143-101	TESTJACK	VerticalTestJack
TP20	1-00143-101	TESTJACK	VerticalTestJack
TP21	1-00143-101	TESTJACK	VerticalTestJack
TP22	1-00143-101	TESTJACK	VerticalTestJack
TP23	1-00143-101	TESTJACK	VerticalTestJack
U10	3-00149-329	LM317T	VoltageReg.,TO-220(TAB)Package
U11	3-00141-329	LM337T	VoltageReg.,TO-220(TAB)Package
U20	3-00149-329	LM317T	VoltageReg.,TO-220(TAB)Package
U21	3-00141-329	LM337T	VoltageReg.,TO-220(TAB)Package
U30	3-00096-340	LM317L	IntegratedCircuit(Thru-holePkg)
U40	3-00096-340	LM317L	IntegratedCircuit(Thru-holePkg)
Z0	0-00121-050	2-1/2"#18	Wire#18UL1007Stripped3/8x3/8NoTin
Z0	0-00127-050	4"#18	Wire#18UL1007Stripped3/8x3/8NoTin
Z0	0-00168-023	6-32X5/16R	Screw,RoundheadPhillips
Z0	0-00187-021	4-40X1/4PP	Screw,PanheadPhillips
Z0	0-00231-043	#4SHOULDER	Washer,nylon
Z0	0-00244-021	6-32X1-1/8PP	Screw,PanheadPhillips
Z0	0-00316-003	PLTFM-28	Insulators
Z0	0-00373-000	CARDEJECTOR	Hardware,Misc.
Z0	0-00509-000	60MM12V	Hardware,Misc.
Z0	1-00002-113	10PIN,18AWG/OR	Connector,Amp,MTA-156
Z0	1-00033-113	5PIN,18AWG/OR	Connector,Amp,MTA-156
Z0	6-00179-615	MAP55-4000	PowerSupply
Z0	7-00541-720	SR780-27	FabricatedPart

SystemBackplanePartsList

ThissectioncoversschematicsMBKPL-20throughMBKPL-23inChapter5.

SystemBackplaneAssembly			
RefNo.	SRSPartNo.	Value	Com ponentDescri ption
JP1A	1-00237-108	120PINVERTICA	DINConnector,Female
J2A	1-00240-108	96PINRTANGLE	DINConnector,Female
JP3A	1-00016-160	RS23225PIND	Connector,D-Sub,RightAnglePC,Female
JP4A	1-00272-130	34PINDI	Connector,Male
JP5A	0-00112-053	1-3/4"#24R	Wire#24UL1007Strip1/4x1/4Tin
JP6A	0-00112-053	1-3/4"#24R	Wire#24UL1007Strip1/4x1/4Tin
JP10A	1-00237-108	120PINVERTICA	DINConnector,Female
JP11A	1-00238-161	GPIBSHIELDED	Connector,IEEE488,Reverse,R/A,Female
JP12A	1-00016-160	RS23225PIND	Connector,D-Sub,RightAnglePC,Female
JP13A	1-00242-130	20PINELHVERT	Connector,Male
JP20A	1-00237-108	120PINVERTICA	DINConnector,Female
JP21A	1-00119-116	3PIN,WHITE	Header,Amp,MTA-156
JP22A	1-00272-130	34PINDI	Connector,Male
JP23A	1-00152-116	11PIN,WHITE	Header,Amp,MTA-156
JP24A	1-00250-116	2PIN,WHITE	Header,Amp,MTA-156
Z0A	6-00076-600	2"SPKR	Misc.Components

DiskCardPartsList

ThissectioncoversschematicMBKPL-24inChapter5.

DiskCardAssembly			
RefNo.	SRSPartNo.	Value	Com ponentDescri ption
C1B	5-00192-542	22UMIN	Ca p,MiniElectrol ytic,50V,20%Radial
JP1B	1-00234-109	96PINRTANGLE	DINConnector,Male
JP2B	1-00272-130	34PINDI	Connector,Male
JP3B	1-00116-130	4PINDIDISK	Connector,Male
JP4B	1-00113-100	DIN5	Connector,Misc.
Z0B	8-00034-850	FLOPPY	DiskDrive

DSPBoardPartsList

ThissectioncoversschematicsD785-1throughD785-11inChapter5.

DSPBoardAssembly			
RefNo.	SRSPartNo.	Value	Com ponentDescri ption
C101	5-00100-517	2.2U	Ca pacitor,Tantalum,35V,20%,Rad
C102	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C103	5-00134-529	100P	Cap,MonolythicCeramic,50V,20%,Z5U
C301	5-00177-501	30P	Capacitor,CeramicDisc,50V,10%,SL
C501	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C502	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C505	5-00148-545	1000P	Capacitor,MonolythicCeramic,COG,1%
C506	5-00148-545	1000P	Capacitor,MonolythicCeramic,COG,1%
C507	5-00148-545	1000P	Capacitor,MonolythicCeramic,COG,1%
C508	5-00148-545	1000P	Capacitor,MonolythicCeramic,COG,1%
C509	5-00148-545	1000P	Capacitor,MonolythicCeramic,COG,1%
C510	5-00148-545	1000P	Capacitor,MonolythicCeramic,COG,1%
C511	5-00134-529	100P	Cap,MonolythicCeramic,50V,20%,Z5U
C513	5-00148-545	1000P	Capacitor,MonolythicCeramic,COG,1%
C514	5-00003-501	10P	Capacitor,CeramicDisc,50V,10%,SL
C515	5-00134-529	100P	Cap,MonolythicCeramic,50V,20%,Z5U
C516	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C517	5-00134-529	100P	Cap,MonolythicCeramic,50V,20%,Z5U
C520	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C521	5-00003-501	10P	Capacitor,CeramicDisc,50V,10%,SL
C530	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C531	5-00053-512	.033U	Cap,StackedMetalFilm50V5%-40/+85c
C532	5-00052-512	.01U	Cap,StackedMetalFilm50V5%-40/+85c
C533	5-00050-566	.0033U	Cap,PolyesterFilm50V5%-40/+85cRad
C534	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C550	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C551	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C554	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C555	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C556	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C557	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C558	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C559	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C560	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C561	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C562	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C563	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C564	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C565	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C566	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C567	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C570	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C571	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C572	5-00034-526	100U	Capacitor,Electrolytic,35V,20%,Rad
C573	5-00034-526	100U	Capacitor,Electrolytic,35V,20%,Rad
C574	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C575	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C576	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C577	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C601	5-00134-529	100P	Cap,MonolythicCeramic,50V,20%,Z5U
C602	5-00200-532	470P	Capacitor,CeramicDisc,50V,10%NPO

DSPBoardAssembly			
RefNo.	SRSPartNo.	Value	Com ponentDescri ption
C603	5-00013-501	33P	Ca pacitor,CeramicDisc,50V,10%,SL
C604	5-00013-501	33P	Capacitor,CeramicDisc,50V,10%,SL
C621	5-00134-529	100P	Cap,MonolythicCeramic,50V,20%,Z5U
C622	5-00200-532	470P	Capacitor,CeramicDisc,50V,10%NPO
C623	5-00013-501	33P	Capacitor,CeramicDisc,50V,10%,SL
C624	5-00013-501	33P	Capacitor,CeramicDisc,50V,10%,SL
C628	5-00200-532	470P	Capacitor,CeramicDisc,50V,10%NPO
C629	5-00134-529	100P	Cap,MonolythicCeramic,50V,20%,Z5U
C630	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C631	5-00134-529	100P	Cap,MonolythicCeramic,50V,20%,Z5U
C632	5-00134-529	100P	Cap,MonolythicCeramic,50V,20%,Z5U
C640	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C650	5-00093-517	.15U	Capacitor,Tantalum,35V,20%,Rad
C651	5-00093-517	.15U	Capacitor,Tantalum,35V,20%,Rad
C652	5-00093-517	.15U	Capacitor,Tantalum,35V,20%,Rad
C653	5-00093-517	.15U	Capacitor,Tantalum,35V,20%,Rad
C654	5-00093-517	.15U	Capacitor,Tantalum,35V,20%,Rad
C655	5-00093-517	.15U	Capacitor,Tantalum,35V,20%,Rad
C656	5-00093-517	.15U	Capacitor,Tantalum,35V,20%,Rad
C657	5-00093-517	.15U	Capacitor,Tantalum,35V,20%,Rad
C658	5-00093-517	.15U	Capacitor,Tantalum,35V,20%,Rad
C659	5-00093-517	.15U	Capacitor,Tantalum,35V,20%,Rad
C660	5-00098-517	10U	Capacitor,Tantalum,35V,20%,Rad
C661	5-00098-517	10U	Capacitor,Tantalum,35V,20%,Rad
C662	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C663	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C701	5-00232-520	470U	Capacitor,Electrolytic,16V,20%,Rad
C702	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C703	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C704	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C705	5-00177-501	30P	Capacitor,CeramicDisc,50V,10%,SL
C706	5-00177-501	30P	Capacitor,CeramicDisc,50V,10%,SL
C901	5-00038-509	10U	Capacitor,Electrolytic,50V,20%,Rad
C902	5-00038-509	10U	Capacitor,Electrolytic,50V,20%,Rad
C903	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C904	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C905	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C906	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C907	5-00232-520	470U	Capacitor,Electrolytic,16V,20%,Rad
C908	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C920	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C921	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C922	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C923	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C924	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C925	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C926	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C927	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C928	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C929	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C930	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C931	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C932	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C933	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C934	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C935	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C936	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX

DSP Board Assembly			
RefNo.	SRSPartNo.	Value	Component Description
C937	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C938	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C939	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C940	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C941	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C942	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C943	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C944	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C945	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C946	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C947	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C948	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C949	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C950	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C951	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C952	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C953	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C954	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C955	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C956	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C957	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C958	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C959	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C960	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C961	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C962	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C963	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C964	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C965	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C966	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C967	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C968	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C969	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C970	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C971	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C972	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C973	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C974	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C975	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C976	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C977	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C978	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C979	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C980	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C981	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C982	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C983	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C984	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C985	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C986	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C987	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C988	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C989	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C990	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C991	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C992	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C993	5-00225-548	.1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX

DSPBoardAssembly			
RefNo.	SRSPartNo.	Value	Com ponentDescri ption
C994	5-00225-548	1UAXIAL	Ca pacitor,Ceramic,50V,+80/-20%Z5UAX
C995	5-00225-548	1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C996	5-00225-548	1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C997	5-00225-548	1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C998	5-00225-548	1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
C999	5-00225-548	1UAXIAL	Capacitor,Ceramic,50V,+80/-20%Z5UAX
D501	3-00004-301	1N4148	Diode
D502	3-00004-301	1N4148	Diode
D601	3-00204-301	1N5230	Diode
D602	3-00204-301	1N5230	Diode
D603	3-00004-301	1N4148	Diode
D604	3-00004-301	1N4148	Diode
D605	3-00204-301	1N5230	Diode
D606	3-00204-301	1N5230	Diode
D607	3-00004-301	1N4148	Diode
D608	3-00004-301	1N4148	Diode
D660	3-00004-301	1N4148	Diode
D661	3-00004-301	1N4148	Diode
J201	1-00239-135	72PINSIMM	Connector,CardEdge
J202	1-00239-135	72PINSIMM	Connector,CardEdge
J203	1-00239-135	72PINSIMM	Connector,CardEdge
J204	1-00239-135	72PINSIMM	Connector,CardEdge
J501	1-00241-141	RTANGLEJACK	SMBConnector
J601	1-00241-141	RTANGLEJACK	SMBConnector
J901	1-00234-109	96PINRTANGLE	DINConnector,Male
J902	1-00234-109	96PINRTANGLE	DINConnector,Male
JP301	1-00239-135	72PINSIMM	Connector,CardEdge
K501	3-00444-335	BS-211-DC5GF	Relay
K601	3-00196-335	HS-212S-5	Relay
K602	3-00196-335	HS-212S-5	Relay
K603	3-00196-335	HS-212S-5	Relay
K614	3-00444-335	BS-211-DC5GF	Relay
K615	3-00444-335	BS-211-DC5GF	Relay
K701	3-00444-335	BS-211-DC5GF	Relay
L701	6-00180-603	560U	Inductor,Axial
N101	4-00270-425	1.0KX5	ResistorNetworkSIP1/4W2%(Common)
N501	4-00262-425	100X7	ResistorNetworkSIP1/4W2%(Common)
N502	4-00262-425	100X7	ResistorNetworkSIP1/4W2%(Common)
N601	4-00856-421	1.0KX5	Res.Network,SIP,1/4W,2%(Isolated)
N602	4-00856-421	1.0KX5	Res.Network,SIP,1/4W,2%(Isolated)
N702	4-00852-420	82X8	ResistorNetwork,DIP,1/4W,2%,8Ind
N703	4-00265-421	100X4	Res.Network,SIP,1/4W,2%(Isolated)
N801	4-00690-421	3.3KX4	Res.Network,SIP,1/4W,2%(Isolated)
N802	4-00767-420	270X8	ResistorNetwork,DIP,1/4W,2%,8Ind
N803	4-00767-420	270X8	ResistorNetwork,DIP,1/4W,2%,8Ind
PC1	7-00762-701	SR785DSP	PrintedCircuitBoard
Q701	3-00022-325	2N3906	Transistor,TO-92Package
Q702	3-00022-325	2N3906	Transistor,TO-92Package
R101	4-00029-401	1.8K	Resistor,CarbonFilm,1/4W,5%
R102	4-00471-401	82	Resistor,CarbonFilm,1/4W,5%
R103	4-00471-401	82	Resistor,CarbonFilm,1/4W,5%
R111	0-00001-000	WIRE	Hardware,Misc.
R112	0-00001-000	WIRE	Hardware,Misc.
R113	0-00001-000	WIRE	Hardware,Misc.
R114	0-00001-000	WIRE	Hardware,Misc.
R115	0-00001-000	WIRE	Hardware,Misc.
R116	0-00001-000	WIRE	Hardware,Misc.

DSPBoardAssembly			
RefNo.	SRSPartNo.	Value	Com ponentDescri ption
R301	4-00079-401	4.7K	Resistor,CarbonFilm,1/4W,5%
R302	4-00079-401	4.7K	Resistor,CarbonFilm,1/4W,5%
R501	4-00177-407	3.48K	Resistor,MetalFilm,1/8W,1%,50PPM
R502	4-00177-407	3.48K	Resistor,MetalFilm,1/8W,1%,50PPM
R504	4-00771-407	66.5	Resistor,MetalFilm,1/8W,1%,50PPM
R505	4-00163-407	2.80K	Resistor,MetalFilm,1/8W,1%,50PPM
R506	4-00409-408	1.210K	Resistor,MetalFilm,1/8W,0.1%,25ppm
R507	4-00409-408	1.210K	Resistor,MetalFilm,1/8W,0.1%,25ppm
R508	4-00467-407	2.43K	Resistor,MetalFilm,1/8W,1%,50PPM
R509	4-00193-407	499	Resistor,MetalFilm,1/8W,1%,50PPM
R510	4-00158-407	2.00K	Resistor,MetalFilm,1/8W,1%,50PPM
R511	4-00409-408	1.210K	Resistor,MetalFilm,1/8W,0.1%,25ppm
R512	4-00409-408	1.210K	Resistor,MetalFilm,1/8W,0.1%,25ppm
R513	4-00746-407	2.05K	Resistor,MetalFilm,1/8W,1%,50PPM
R514	4-00317-407	422	Resistor,MetalFilm,1/8W,1%,50PPM
R515	4-00652-407	1.58K	Resistor,MetalFilm,1/8W,1%,50PPM
R516	4-00409-408	1.210K	Resistor,MetalFilm,1/8W,0.1%,25ppm
R517	4-00409-408	1.210K	Resistor,MetalFilm,1/8W,0.1%,25ppm
R518	4-00523-407	649	Resistor,MetalFilm,1/8W,1%,50PPM
R519	4-00158-407	2.00K	Resistor,MetalFilm,1/8W,1%,50PPM
R520	4-00193-407	499	Resistor,MetalFilm,1/8W,1%,50PPM
R521	4-00136-407	1.82K	Resistor,MetalFilm,1/8W,1%,50PPM
R522	4-00654-407	182	Resistor,MetalFilm,1/8W,1%,50PPM
R523	4-00356-407	20	Resistor,MetalFilm,1/8W,1%,50PPM
R524	4-00057-401	220	Resistor,CarbonFilm,1/4W,5%
R525	4-00233-424	47	Resistor,CarbonComp,2W,5%
R527	4-00031-401	100	Resistor,CarbonFilm,1/4W,5%
R530	4-00479-407	66.5K	Resistor,MetalFilm,1/8W,1%,50PPM
R531	4-00457-407	33.2K	Resistor,MetalFilm,1/8W,1%,50PPM
R532	4-00138-407	10.0K	Resistor,MetalFilm,1/8W,1%,50PPM
R533	4-00161-407	2.49K	Resistor,MetalFilm,1/8W,1%,50PPM
R534	4-00130-407	1.00K	Resistor,MetalFilm,1/8W,1%,50PPM
R535	4-00066-401	3.3M	Resistor,CarbonFilm,1/4W,5%
R536	4-00210-407	9.09K	Resistor,MetalFilm,1/8W,1%,50PPM
R537	4-00193-407	499	Resistor,MetalFilm,1/8W,1%,50PPM
R570	4-00107-402	10	Resistor,CarbonComp,1/2W,5%
R571	4-00107-402	10	Resistor,CarbonComp,1/2W,5%
R572	4-00080-401	47	Resistor,CarbonFilm,1/4W,5%
R573	4-00080-401	47	Resistor,CarbonFilm,1/4W,5%
R600	4-00045-401	2.0K	Resistor,CarbonFilm,1/4W,5%
R601	4-00022-401	1.0M	Resistor,CarbonFilm,1/4W,5%
R602	4-00130-407	1.00K	Resistor,MetalFilm,1/8W,1%,50PPM
R603	4-00032-401	100K	Resistor,CarbonFilm,1/4W,5%
R604	4-00034-401	10K	Resistor,CarbonFilm,1/4W,5%
R605	4-00045-401	2.0K	Resistor,CarbonFilm,1/4W,5%
R606	4-00062-401	270	Resistor,CarbonFilm,1/4W,5%
R607	4-00034-401	10K	Resistor,CarbonFilm,1/4W,5%
R608	4-00022-401	1.0M	Resistor,CarbonFilm,1/4W,5%
R609	4-00130-407	1.00K	Resistor,MetalFilm,1/8W,1%,50PPM
R610	4-00241-407	787	Resistor,MetalFilm,1/8W,1%,50PPM
R620	4-00480-407	80.6K	Resistor,MetalFilm,1/8W,1%,50PPM
R621	4-00164-407	20.0K	Resistor,MetalFilm,1/8W,1%,50PPM
R622	4-00130-407	1.00K	Resistor,MetalFilm,1/8W,1%,50PPM
R623	4-00032-401	100K	Resistor,CarbonFilm,1/4W,5%
R624	4-00034-401	10K	Resistor,CarbonFilm,1/4W,5%
R625	4-00045-401	2.0K	Resistor,CarbonFilm,1/4W,5%
R626	4-00062-401	270	Resistor,CarbonFilm,1/4W,5%

DSPBoardAssembly			
RefNo.	SRSPartNo.	Value	Com ponentDescri ption
R627	4-00034-401	10K	Resistor,CarbonFilm,1/4W,5%
R628	4-00022-401	1.0M	Resistor,CarbonFilm,1/4W,5%
R629	4-00130-407	1.00K	Resistor,MetalFilm,1/8W,1%,50PPM
R630	4-00048-401	2.2K	Resistor,CarbonFilm,1/4W,5%
R631	4-00188-407	4.99K	Resistor,MetalFilm,1/8W,1%,50PPM
R632	4-00161-407	2.49K	Resistor,MetalFilm,1/8W,1%,50PPM
R633	4-00188-407	4.99K	Resistor,MetalFilm,1/8W,1%,50PPM
R635	4-00188-407	4.99K	Resistor,MetalFilm,1/8W,1%,50PPM
R636	4-00161-407	2.49K	Resistor,MetalFilm,1/8W,1%,50PPM
R637	4-00188-407	4.99K	Resistor,MetalFilm,1/8W,1%,50PPM
R640	4-00031-401	100	Resistor,CarbonFilm,1/4W,5%
R645	4-00241-407	787	Resistor,MetalFilm,1/8W,1%,50PPM
R646	4-00062-401	270	Resistor,CarbonFilm,1/4W,5%
R647	4-00034-401	10K	Resistor,CarbonFilm,1/4W,5%
R648	4-00022-401	1.0M	Resistor,CarbonFilm,1/4W,5%
R649	4-00702-407	1.78K	Resistor,MetalFilm,1/8W,1%,50PPM
R660	4-00781-402	56	Resistor,CarbonComp,1/2W,5%
R661	4-00781-402	56	Resistor,CarbonComp,1/2W,5%
R670	4-00022-401	1.0M	Resistor,CarbonFilm,1/4W,5%
R671	4-00062-401	270	Resistor,CarbonFilm,1/4W,5%
R672	4-00034-401	10K	Resistor,CarbonFilm,1/4W,5%
R673	4-00062-401	270	Resistor,CarbonFilm,1/4W,5%
R679	4-00045-401	2.0K	Resistor,CarbonFilm,1/4W,5%
R701	4-00034-401	10K	Resistor,CarbonFilm,1/4W,5%
R702	4-00034-401	10K	Resistor,CarbonFilm,1/4W,5%
R703	4-00471-401	82	Resistor,CarbonFilm,1/4W,5%
R704	4-00471-401	82	Resistor,CarbonFilm,1/4W,5%
R705	4-00471-401	82	Resistor,CarbonFilm,1/4W,5%
R706	4-00038-401	120	Resistor,CarbonFilm,1/4W,5%
R707	4-00038-401	120	Resistor,CarbonFilm,1/4W,5%
R708	4-00031-401	100	Resistor,CarbonFilm,1/4W,5%
R709	4-00031-401	100	Resistor,CarbonFilm,1/4W,5%
R901	4-00021-401	1.0K	Resistor,CarbonFilm,1/4W,5%
SO101	1-00231-150	PGA223PIN	Socket,THRU-HOLE
SO715	1-00156-150	32PIN600MIL	Socket,THRU-HOLE
T501	6-00137-601	15MH	Inductor
T601	6-00009-610	T1-1-X65	Transformer
T611	6-00009-610	T1-1-X65	Transformer
T612	6-00009-610	T1-1-X65	Transformer
TP502	1-00143-101	TESTJACK	VerticalTestJack
TP503	1-00143-101	TESTJACK	VerticalTestJack
TP506	1-00143-101	TESTJACK	VerticalTestJack
TP507	1-00143-101	TESTJACK	VerticalTestJack
TP601	1-00143-101	TESTJACK	VerticalTestJack
TP602	1-00143-101	TESTJACK	VerticalTestJack
TP603	1-00143-101	TESTJACK	VerticalTestJack
TP604	1-00143-101	TESTJACK	VerticalTestJack
TP901	1-00143-101	TESTJACK	VerticalTestJack
TP902	1-00143-101	TESTJACK	VerticalTestJack
TP903	1-00143-101	TESTJACK	VerticalTestJack
U101	3-00577-340	ADSP21020KG-133	IntegratedCircuit(Thru-holePkg)
U102	6-00177-621	33.333MHZ	CrystalOscillator
U301	3-00859-343	SR785U301	GAL/PAL,I.C.
U302	3-00597-340	CY7C433-25	IntegratedCircuit(Thru-holePkg)
U303	3-00597-340	CY7C433-25	IntegratedCircuit(Thru-holePkg)
U304	3-00597-340	CY7C433-25	IntegratedCircuit(Thru-holePkg)
U401	3-00265-340	74HC595	IntegratedCircuit(Thru-holePkg)

DSPBoardAssembly			
RefNo.	SRSPartNo.	Value	Com ponentDescri ption
U402	3-00265-340	74HC595	Inte gratedCircuit (Thru-holePk g)
U403	3-00265-340	74HC595	IntegratedCircuit(Thru-holePkg)
U404	3-00265-340	74HC595	IntegratedCircuit(Thru-holePkg)
U405	3-00265-340	74HC595	IntegratedCircuit(Thru-holePkg)
U406	3-00265-340	74HC595	IntegratedCircuit(Thru-holePkg)
U407	3-00265-340	74HC595	IntegratedCircuit(Thru-holePkg)
U408	3-00265-340	74HC595	IntegratedCircuit(Thru-holePkg)
U409	3-00488-340	74HC597	IntegratedCircuit(Thru-holePkg)
U410	3-00488-340	74HC597	IntegratedCircuit(Thru-holePkg)
U411	3-00350-340	74ALS04	IntegratedCircuit(Thru-holePkg)
U501	3-00531-340	AD766JN	IntegratedCircuit(Thru-holePkg)
U502	3-00532-340	AD744	IntegratedCircuit(Thru-holePkg)
U505	3-00130-340	5532A	IntegratedCircuit(Thru-holePkg)
U506	3-00130-340	5532A	IntegratedCircuit(Thru-holePkg)
U507	3-00130-340	5532A	IntegratedCircuit(Thru-holePkg)
U508	3-00768-340	5534TIONLY	IntegratedCircuit(Thru-holePkg)
U509	3-00241-340	AD7528JN	IntegratedCircuit(Thru-holePkg)
U510	3-00371-340	DG444	IntegratedCircuit(Thru-holePkg)
U511	3-00768-340	5534TIONLY	IntegratedCircuit(Thru-holePkg)
U512	3-00383-340	LM6321	IntegratedCircuit(Thru-holePkg)
U513	3-00768-340	5534TIONLY	IntegratedCircuit(Thru-holePkg)
U520	3-00117-325	78L12	Transistor,TO-92Package
U521	3-00123-325	79L12	Transistor,TO-92Package
U530	3-00089-340	LF357	IntegratedCircuit(Thru-holePkg)
U601	3-00461-340	OPA2604	IntegratedCircuit(Thru-holePkg)
U602	3-00262-340	74HC86	IntegratedCircuit(Thru-holePkg)
U603	3-00211-340	LT1016	IntegratedCircuit(Thru-holePkg)
U604	3-00461-340	OPA2604	IntegratedCircuit(Thru-holePkg)
U605	3-00211-340	LT1016	IntegratedCircuit(Thru-holePkg)
U606	3-00087-340	LF347	IntegratedCircuit(Thru-holePkg)
U607	3-00241-340	AD7528JN	IntegratedCircuit(Thru-holePkg)
U608	3-00116-325	78L05	Transistor,TO-92Package
U610	3-00116-325	78L05	Transistor,TO-92Package
U611	3-00122-325	79L05	Transistor,TO-92Package
U612	3-00262-340	74HC86	IntegratedCircuit(Thru-holePkg)
U613	3-00491-340	UPD71054C	IntegratedCircuit(Thru-holePkg)
U614	3-00404-340	74HC107	IntegratedCircuit(Thru-holePkg)
U615	3-00155-340	74HC04	IntegratedCircuit(Thru-holePkg)
U616	3-00861-343	SR785U616	GAL/PAL,I.C.
U701	3-00855-343	SR785U701	GAL/PAL,I.C.
U702	3-00856-343	SR785U702	GAL/PAL,I.C.
U703	3-00857-343	SR785U703	GAL/PAL,I.C.
U704	3-00863-343	SR785U704	GAL/PAL,I.C.
U705	6-00110-621	30.208MHZ	CrystalOscillator
U706	6-00181-621	30.933MHZ	CrystalOscillator
U707	3-00411-340	74HC273	IntegratedCircuit(Thru-holePkg)
U708	3-00411-340	74HC273	IntegratedCircuit(Thru-holePkg)
U709	3-00411-340	74HC273	IntegratedCircuit(Thru-holePkg)
U710	3-00411-340	74HC273	IntegratedCircuit(Thru-holePkg)
U711	3-00603-340	74ALS573	IntegratedCircuit(Thru-holePkg)
U712	3-00584-340	74ACT574	IntegratedCircuit(Thru-holePkg)
U713	3-00584-340	74ACT574	IntegratedCircuit(Thru-holePkg)
U714	3-00862-343	SR785U714	GAL/PAL,I.C.
U716	3-00584-340	74ACT574	IntegratedCircuit(Thru-holePkg)
U720	3-00274-340	74AC74	IntegratedCircuit(Thru-holePkg)
U721	3-00055-340	74LS74	IntegratedCircuit(Thru-holePkg)
U722	3-00055-340	74LS74	IntegratedCircuit(Thru-holePkg)

DSPBoardAssembly			
RefNo.	SRSPartNo.	Value	Com ponentDescri ption
U723	3-00274-340	74AC74	Inte gratedCircuit (Thru-holePk g)
U725	3-00195-340	CA3082	IntegratedCircuit(Thru-holePkg)
U801	3-00440-340	74HC573	IntegratedCircuit(Thru-holePkg)
U802	3-00387-340	74HC245	IntegratedCircuit(Thru-holePkg)
U803	3-00387-340	74HC245	IntegratedCircuit(Thru-holePkg)
U804	3-00590-340	74ACT00	IntegratedCircuit(Thru-holePkg)
U805	3-00037-340	74HC138	IntegratedCircuit(Thru-holePkg)
U806	3-00440-340	74HC573	IntegratedCircuit(Thru-holePkg)
U807	3-00440-340	74HC573	IntegratedCircuit(Thru-holePkg)
U808	3-00411-340	74HC273	IntegratedCircuit(Thru-holePkg)
U809	3-00411-340	74HC273	IntegratedCircuit(Thru-holePkg)
U810	3-00604-342	2KX8SERIAL	EPROM PROM.I.C.
U901	3-00114-329	7815	VoltageReg.,TO-220(TAB)Package
U902	3-00120-329	7915	VoltageReg.,TO-220(TAB)Package
Z0	0-00012-007	TO-220	HeatSinks
Z0	0-00043-011	4-40KEP	Nut,Kep
Z0	0-00209-021	4-40X3 8PP	Screw,PanheadPhillips
Z0	0-00231-043	#4SHOULDER	Washer,nylon
Z0	0-00243-003	TO-220	Insulators
Z0	0-00341-010	2-56HEX	Nut,Hex
Z0	0-00373-000	CARDEJECTOR	Hardware,Misc
Z0	0-00728-021	2-56X1/2PP	Screw,PanheadPhillips

AnalogInputBoardPartsList

ThissectioncoversschematicsA780-1throughA780-7inChapter5.TheSR785usestwoofthese boards.

AnalogInputBoardAssembly			
RefNo.	SRSPartNo.	Value	Com ponentDescri ption
C101	5-00060-512	1.0U	Ca p,StackedMetalFilm50V5%-40/+85c
C102	5-00060-512	1.0U	Cap,StackedMetalFilm50V5%-40/+85c
C104	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C105	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C106	5-00159-501	6.8P	Capacitor,CeramicDisc,50V,10%,SL
C110	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C156	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C157	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C158	5-00093-517	.15U	Capacitor,Tantalum,35V,20%,Rad
C159	5-00093-517	.15U	Capacitor,Tantalum,35V,20%,Rad
C160	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C161	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C162	5-00093-517	.15U	Capacitor,Tantalum,35V,20%,Rad
C163	5-00093-517	.15U	Capacitor,Tantalum,35V,20%,Rad
C165	5-00227-526	100U	Capacitor,Electrolytic,35V,20%,Rad
C166	5-00093-517	.15U	Capacitor,Tantalum,35V,20%,Rad
C167	5-00093-517	.15U	Capacitor,Tantalum,35V,20%,Rad
C180	5-00134-529	100P	Cap,MonolythicCeramic,50V,20%,Z5U
C181	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C182	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C201	5-00008-501	22P	Capacitor,CeramicDisc,50V,10%,SL
C202	5-00005-501	150P	Capacitor,CeramicDisc,50V,10%,SL
C203	5-00017-501	47P	Capacitor,CeramicDisc,50V,10%,SL
C204	5-00008-501	22P	Capacitor,CeramicDisc,50V,10%,SL
C205	5-00005-501	150P	Capacitor,CeramicDisc,50V,10%,SL
C206	5-00017-501	47P	Capacitor,CeramicDisc,50V,10%,SL
C210	5-00148-545	1000P	Capacitor,MonolythicCeramic,COG,1%
C211	5-00148-545	1000P	Capacitor,MonolythicCeramic,COG,1%
C212	5-00148-545	1000P	Capacitor,MonolythicCeramic,COG,1%
C213	5-00148-545	1000P	Capacitor,MonolythicCeramic,COG,1%
C214	5-00148-545	1000P	Capacitor,MonolythicCeramic,COG,1%
C215	5-00148-545	1000P	Capacitor,MonolythicCeramic,COG,1%
C216	5-00148-545	1000P	Capacitor,MonolythicCeramic,COG,1%
C217	5-00148-545	1000P	Capacitor,MonolythicCeramic,COG,1%
C218	5-00148-545	1000P	Capacitor,MonolythicCeramic,COG,1%
C219	5-00134-529	100P	Cap,MonolythicCeramic,50V,20%,Z5U
C220	5-00148-545	1000P	Capacitor,MonolythicCeramic,COG,1%
C221	5-00148-545	1000P	Capacitor,MonolythicCeramic,COG,1%
C222	5-00148-545	1000P	Capacitor,MonolythicCeramic,COG,1%
C223	5-00148-545	1000P	Capacitor,MonolythicCeramic,COG,1%
C224	5-00148-545	1000P	Capacitor,MonolythicCeramic,COG,1%
C225	5-00148-545	1000P	Capacitor,MonolythicCeramic,COG,1%
C226	5-00148-545	1000P	Capacitor,MonolythicCeramic,COG,1%
C227	5-00148-545	1000P	Capacitor,MonolythicCeramic,COG,1%
C228	5-00148-545	1000P	Capacitor,MonolythicCeramic,COG,1%
C229	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C230	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C250	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C251	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C252	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad

AnalogInputBoardAssembly			
RefNo.	SRSPartNo.	Value	Com ponentDescri ption
C253	5-00100-517	2.2U	Ca pacitor,Tantalum,35V,20%,Rad
C254	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C255	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C256	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C257	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C258	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C259	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C260	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C261	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C262	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C263	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C264	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C265	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C266	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C267	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C268	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C269	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C270	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C271	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C272	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C273	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C274	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C275	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C276	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C277	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C278	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C279	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C280	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C281	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C282	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C301	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C310	5-00049-566	.001U	Cap,PolyesterFilm50V5%-40/+85cRad
C311	5-00056-512	.1U	Cap,StackedMetalFilm50V5%-40/+85c
C312	5-00056-512	.1U	Cap,StackedMetalFilm50V5%-40/+85c
C313	5-00056-512	.1U	Cap,StackedMetalFilm50V5%-40/+85c
C314	5-00317-501	750P	Capacitor,CeramicDisc,50V,10%,SL
C315	5-00056-512	.1U	Cap,StackedMetalFilm50V5%-40/+85c
C341	5-00134-529	100P	Cap,MonolythicCeramic,50V,20%,Z5U
C342	5-00134-529	100P	Cap,MonolythicCeramic,50V,20%,Z5U
C354	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C355	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C356	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C357	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C360	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C361	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C362	5-00134-529	100P	Cap,MonolythicCeramic,50V,20%,Z5U
C371	5-00269-501	300P	Capacitor,CeramicDisc,50V,10%,SL
C372	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C373	5-00006-501	15P	Capacitor,CeramicDisc,50V,10%,SL
C378	5-00093-517	.15U	Capacitor,Tantalum,35V,20%,Rad
C379	5-00093-517	.15U	Capacitor,Tantalum,35V,20%,Rad
C388	5-00093-517	.15U	Capacitor,Tantalum,35V,20%,Rad
C389	5-00093-517	.15U	Capacitor,Tantalum,35V,20%,Rad
C390	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C391	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C394	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C395	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad

AnalogInputBoardAssembly

RefNo.	SRSPartNo.	Value	ComponentDescription
C401	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C402	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C403	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C404	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C410	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C411	5-00098-517	10U	Capacitor,Tantalum,35V,20%,Rad
C414	5-00098-517	10U	Capacitor,Tantalum,35V,20%,Rad
C420	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C421	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C422	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C423	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C424	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C425	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C426	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C427	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C428	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C429	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C440	5-00287-562	22P	Cap.,NPOMonoliticCeramic,50v,5%Ra
C441	5-00287-562	22P	Cap.,NPOMonoliticCeramic,50v,5%Ra
C456	5-00093-517	15U	Capacitor,Tantalum,35V,20%,Rad
C501	5-00038-509	10U	Capacitor,Electrolytic,50V,20%,Rad
C502	5-00038-509	10U	Capacitor,Electrolytic,50V,20%,Rad
C503	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C504	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C505	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C506	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C511	5-00038-509	10U	Capacitor,Electrolytic,50V,20%,Rad
C512	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C513	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C521	5-00098-517	10U	Capacitor,Tantalum,35V,20%,Rad
C522	5-00098-517	10U	Capacitor,Tantalum,35V,20%,Rad
C523	5-00098-517	10U	Capacitor,Tantalum,35V,20%,Rad
C524	5-00098-517	10U	Capacitor,Tantalum,35V,20%,Rad
C525	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C526	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C531	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C532	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C533	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C534	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C541	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C542	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C543	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C544	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C551	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C552	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C601	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C690	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C691	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
C692	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C701	5-00100-517	2.2U	Capacitor,Tantalum,35V,20%,Rad
D101	3-00004-301	1N4148	Diode
D102	3-00004-301	1N4148	Diode
D103	3-00004-301	1N4148	Diode
D104	3-00004-301	1N4148	Diode
D105	3-00004-301	1N4148	Diode
D106	3-00004-301	1N4148	Diode
D107	3-00004-301	1N4148	Diode

AnalogInputBoardAssembly			
RefNo.	SRSPartNo.	Value	Com ponentDescri ption
D120	3-00457-301	1N5241B	Diode
D201	3-00004-301	1N4148	Diode
D202	3-00004-301	1N4148	Diode
D301	3-00004-301	1N4148	Diode
D302	3-00004-301	1N4148	Diode
D303	3-00004-301	1N4148	Diode
D501	3-00004-301	1N4148	Diode
D502	3-00004-301	1N4148	Diode
D511	3-00004-301	1N4148	Diode
J101	1-00241-141	RTANGLEJACK	SMBConnector
J102	1-00241-141	RTANGLEJACK	SMBConnector
J701	1-00234-109	96PINRTANGLE	DINConnector,Male
K101	3-00240-335	BS-211-DC12GF	Relay
K102	3-00240-335	BS-211-DC12GF	Relay
K103	3-00239-335	HS-212-12	Relay
K104	3-00239-335	HS-212-12	Relay
K105	3-00239-335	HS-212-12	Relay
K106	3-00239-335	HS-212-12	Relay
K107	3-00240-335	BS-211-DC12GF	Relay
K108	3-00239-335	HS-212-12	Relay
K201	3-00240-335	BS-211-DC12GF	Relay
K202	3-00240-335	BS-211-DC12GF	Relay
K203	3-00240-335	BS-211-DC12GF	Relay
K204	3-00240-335	BS-211-DC12GF	Relay
K301	3-00240-335	BS-211-DC12GF	Relay
N102	4-00244-421	10KX4	Res.Network,SIP,1/4W,2%(Isolated)
N103	4-00690-421	3.3KX4	Res.Network,SIP,1/4W,2%(Isolated)
N210	4-00252-425	100X5	ResistorNetworkSIP1/4W2%(Common)
N211	4-00252-425	100X5	ResistorNetworkSIP1/4W2%(Common)
N212	4-00252-425	100X5	ResistorNetworkSIP1/4W2%(Common)
N213	4-00252-425	100X5	ResistorNetworkSIP1/4W2%(Common)
N301	4-00675-456	2.000KX7	Res.Network,DIP,1/4W,0.1%
N402	4-00463-421	82X4	Res.Network,SIP,1/4W,2%(Isolated)
N601	4-00243-420	1.0KX8	ResistorNetwork,DIP,1/4W,2%,8Ind
N602	4-00254-421	1.0KX3	Res.Network,SIP,1/4W,2%(Isolated)
P101	4-00354-445	20	Pot,Multi-Turn,SideAdjust
P102	4-00015-445	100K	Pot,Multi-Turn,SideAdjust
P103	4-00730-445	100	Pot,Multi-Turn,SideAdjust
P104	4-00015-445	100K	Pot,Multi-Turn,SideAdjust
P201	4-00015-445	100K	Pot,Multi-Turn,SideAdjust
P301	4-00731-445	200	Pot,Multi-Turn,SideAdjust
P310	4-00015-445	100K	Pot,Multi-Turn,SideAdjust
P311	4-00760-445	500	Pot,Multi-Turn,SideAdjust
P360	4-00271-445	2.0K	Pot,Multi-Turn,SideAdjust
PC1	7-00616-701	SR780ANALOG	PrintedCircuitBoard
Q101	3-00022-325	2N3906	Transistor,TO-92Package
Q102	3-00021-325	2N3904	Transistor,TO-92Package
Q201	3-00021-325	2N3904	Transistor,TO-92Package
Q202	3-00021-325	2N3904	Transistor,TO-92Package
Q301	3-00021-325	2N3904	Transistor,TO-92Package
Q601	3-00021-325	2N3904	Transistor,TO-92Package
R100	4-00071-401	33	Resistor,CarbonFilm,1/4W,5%
R101	4-00616-453	49.9	Resistor,2W,1%
R102	4-00071-401	33	Resistor,CarbonFilm,1/4W,5%
R103	4-00593-408	965.0K	Resistor,MetalFilm,1/8W,0.1%,25ppm
R104	4-00515-407	31.6K	Resistor,MetalFilm,1/8W,1%,50PPM
R105	4-00593-408	965.0K	Resistor,MetalFilm,1/8W,0.1%,25ppm

AnalogInputBoardAssembly			
RefNo.	SRSPartNo.	Value	Com ponentDescri ption
R106	4-00515-407	31.6K	Resistor,MetalFilm,1/8W,1%,50PPM
R107	4-00580-407	475	Resistor,MetalFilm,1/8W,1%,50PPM
R108	4-00580-407	475	Resistor,MetalFilm,1/8W,1%,50PPM
R109	4-00544-407	165	Resistor,MetalFilm,1/8W,1%,50PPM
R110	4-00193-407	499	Resistor,MetalFilm,1/8W,1%,50PPM
R111	4-00193-407	499	Resistor,MetalFilm,1/8W,1%,50PPM
R112	4-00143-407	102K	Resistor,MetalFilm,1/8W,1%,50PPM
R113	4-00143-407	102K	Resistor,MetalFilm,1/8W,1%,50PPM
R114	4-00145-407	110	Resistor,MetalFilm,1/8W,1%,50PPM
R115	4-00145-407	110	Resistor,MetalFilm,1/8W,1%,50PPM
R116	4-00217-408	1.000K	Resistor,MetalFilm,1/8W,0.1%,25ppm
R117	4-00217-408	1.000K	Resistor,MetalFilm,1/8W,0.1%,25ppm
R118	4-00234-407	10	Resistor,MetalFilm,1/8W,1%,50PPM
R119	4-00375-407	348	Resistor,MetalFilm,1/8W,1%,50PPM
R120	4-00375-407	348	Resistor,MetalFilm,1/8W,1%,50PPM
R121	4-00234-407	10	Resistor,MetalFilm,1/8W,1%,50PPM
R122	4-00234-407	10	Resistor,MetalFilm,1/8W,1%,50PPM
R123	4-00203-407	75.0K	Resistor,MetalFilm,1/8W,1%,50PPM
R124	4-00143-407	102K	Resistor,MetalFilm,1/8W,1%,50PPM
R125	4-00130-407	1.00K	Resistor,MetalFilm,1/8W,1%,50PPM
R126	4-00034-401	10K	Resistor,CarbonFilm,1/4W,5%
R127	4-00192-407	49.9K	Resistor,MetalFilm,1/8W,1%,50PPM
R128	4-00143-407	102K	Resistor,MetalFilm,1/8W,1%,50PPM
R129	4-00143-407	102K	Resistor,MetalFilm,1/8W,1%,50PPM
R141	4-00138-407	10.0K	Resistor,MetalFilm,1/8W,1%,50PPM
R142	4-00411-407	1.37K	Resistor,MetalFilm,1/8W,1%,50PPM
R143	4-00411-407	1.37K	Resistor,MetalFilm,1/8W,1%,50PPM
R144	4-00138-407	10.0K	Resistor,MetalFilm,1/8W,1%,50PPM
R146	4-00696-407	43.2K	Resistor,MetalFilm,1/8W,1%,50PPM
R152	4-00031-401	100	Resistor,CarbonFilm,1/4W,5%
R153	4-00031-401	100	Resistor,CarbonFilm,1/4W,5%
R154	4-00030-401	10	Resistor,CarbonFilm,1/4W,5%
R155	4-00030-401	10	Resistor,CarbonFilm,1/4W,5%
R156	4-00030-401	10	Resistor,CarbonFilm,1/4W,5%
R157	4-00030-401	10	Resistor,CarbonFilm,1/4W,5%
R160	4-00329-407	402	Resistor,MetalFilm,1/8W,1%,50PPM
R161	4-00086-401	51	Resistor,CarbonFilm,1/4W,5%
R162	4-00192-407	49.9K	Resistor,MetalFilm,1/8W,1%,50PPM
R163	4-00138-407	10.0K	Resistor,MetalFilm,1/8W,1%,50PPM
R164	4-00440-407	121K	Resistor,MetalFilm,1/8W,1%,50PPM
R165	4-00031-401	100	Resistor,CarbonFilm,1/4W,5%
R166	4-00022-401	1.0M	Resistor,CarbonFilm,1/4W,5%
R201	4-00380-407	6.34K	Resistor,MetalFilm,1/8W,1%,50PPM
R202	4-00556-407	2.94K	Resistor,MetalFilm,1/8W,1%,50PPM
R203	4-00164-407	20.0K	Resistor,MetalFilm,1/8W,1%,50PPM
R204	4-00556-407	2.94K	Resistor,MetalFilm,1/8W,1%,50PPM
R205	4-00764-407	9.31K	Resistor,MetalFilm,1/8W,1%,50PPM
R206	4-00380-407	6.34K	Resistor,MetalFilm,1/8W,1%,50PPM
R207	4-00556-407	2.94K	Resistor,MetalFilm,1/8W,1%,50PPM
R208	4-00164-407	20.0K	Resistor,MetalFilm,1/8W,1%,50PPM
R209	4-00556-407	2.94K	Resistor,MetalFilm,1/8W,1%,50PPM
R210	4-00764-407	9.31K	Resistor,MetalFilm,1/8W,1%,50PPM
R211	4-00568-407	215	Resistor,MetalFilm,1/8W,1%,50PPM
R212	4-00543-407	169	Resistor,MetalFilm,1/8W,1%,50PPM
R213	4-00873-407	137	Resistor,MetalFilm,1/8W,1%,50PPM
R214	4-00144-407	107	Resistor,MetalFilm,1/8W,1%,50PPM
R215	4-00874-407	84.5	Resistor,MetalFilm,1/8W,1%,50PPM

AnalogInputBoardAssembly			
RefNo.	SRSPartNo.	Value	Com ponentDescri ption
R216	4-00671-407	332	Resistor,MetalFilm,1 8W,1%,50PPM
R220	4-00059-401	22K	Resistor,CarbonFilm,1/4W,5%
R221	4-00158-407	2.00K	Resistor,MetalFilm,1/8W,1%,50PPM
R222	4-00158-407	2.00K	Resistor,MetalFilm,1/8W,1%,50PPM
R223	4-00553-407	2.55K	Resistor,MetalFilm,1 8W,1%,50PPM
R224	4-00553-407	2.55K	Resistor,MetalFilm,1 8W,1%,50PPM
R225	4-00031-401	100	Resistor,CarbonFilm,1/4W,5%
R226	4-00031-401	100	Resistor,CarbonFilm,1/4W,5%
R227	4-00031-401	100	Resistor,CarbonFilm,1/4W,5%
R228	4-00031-401	100	Resistor,CarbonFilm,1/4W,5%
R230	4-00034-401	10K	Resistor,CarbonFilm,1/4W,5%
R231	4-00142-407	100K	Resistor,MetalFilm,1 8W,1%,50PPM
R232	4-00348-407	2.21K	Resistor,MetalFilm,1 8W,1%,50PPM
R233	4-00765-407	56.2	Resistor,MetalFilm,1/8W,1%,50PPM
R234	4-00475-407	2.61K	Resistor,MetalFilm,1/8W,1%,50PPM
R235	4-00748-408	2.000K	Resistor,MetalFilm,1 8W,0.1%,25ppm
R236	4-00748-408	2.000K	Resistor,MetalFilm,1 8W,0.1%,25ppm
R237	4-00467-407	2.43K	Resistor,MetalFilm,1 8W,1%,50PPM
R238	4-00698-407	357	Resistor,MetalFilm,1 8W,1%,50PPM
R239	4-00582-407	2.15K	Resistor,MetalFilm,1 8W,1%,50PPM
R240	4-00748-408	2.000K	Resistor,MetalFilm,1 8W,0.1%,25ppm
R241	4-00748-408	2.000K	Resistor,MetalFilm,1/8W,0.1%,25ppm
R242	4-00159-407	2.10K	Resistor,MetalFilm,1 8W,1%,50PPM
R243	4-00429-407	511	Resistor,MetalFilm,1/8W,1%,50PPM
R244	4-00136-407	1.82K	Resistor,MetalFilm,1 8W,1%,50PPM
R245	4-00748-408	2.000K	Resistor,MetalFilm,1/8W,0.1%,25ppm
R246	4-00748-408	2.000K	Resistor,MetalFilm,1/8W,0.1%,25ppm
R247	4-00137-407	1.91K	Resistor,MetalFilm,1/8W,1%,50PPM
R248	4-00583-407	309	Resistor,MetalFilm,1/8W,1%,50PPM
R249	4-00699-407	1.54K	Resistor,MetalFilm,1/8W,1%,50PPM
R250	4-00748-408	2.000K	Resistor,MetalFilm,1 8W,0.1%,25ppm
R251	4-00748-408	2.000K	Resistor,MetalFilm,1/8W,0.1%,25ppm
R252	4-00200-407	619	Resistor,MetalFilm,1 8W,1%,50PPM
R253	4-00130-407	1.00K	Resistor,MetalFilm,1/8W,1%,50PPM
R254	4-00130-407	1.00K	Resistor,MetalFilm,1/8W,1%,50PPM
R255	4-00188-407	4.99K	Resistor,MetalFilm,1/8W,1%,50PPM
R256	4-00031-401	100	Resistor,CarbonFilm,1/4W,5%
R257	4-00577-407	1.21K	Resistor,MetalFilm,1/8W,1%,50PPM
R258	4-00130-407	1.00K	Resistor,MetalFilm,1/8W,1%,50PPM
R260	4-00034-401	10K	Resistor,CarbonFilm,1/4W,5%
R261	4-00448-407	8.87K	Resistor,MetalFilm,1/8W,1%,50PPM
R262	4-00448-407	8.87K	Resistor,MetalFilm,1/8W,1%,50PPM
R263	4-00739-407	113	Resistor,MetalFilm,1/8W,1%,50PPM
R264	4-00894-407	5.23K	Resistor,MetalFilm,1/8W,1%,50PPM
R265	4-00748-408	2.000K	Resistor,MetalFilm,1/8W,0.1%,25ppm
R266	4-00748-408	2.000K	Resistor,MetalFilm,1/8W,0.1%,25ppm
R267	4-00237-407	4.87K	Resistor,MetalFilm,1/8W,1%,50PPM
R268	4-00280-407	715	Resistor,MetalFilm,1/8W,1%,50PPM
R269	4-00895-407	4.32K	Resistor,MetalFilm,1/8W,1%,50PPM
R270	4-00748-408	2.000K	Resistor,MetalFilm,1/8W,0.1%,25ppm
R271	4-00748-408	2.000K	Resistor,MetalFilm,1/8W,0.1%,25ppm
R272	4-00186-407	4.22K	Resistor,MetalFilm,1/8W,1%,50PPM
R273	4-00308-407	1.02K	Resistor,MetalFilm,1/8W,1%,50PPM
R274	4-00444-407	3.65K	Resistor,MetalFilm,1/8W,1%,50PPM
R275	4-00748-408	2.000K	Resistor,MetalFilm,1/8W,0.1%,25ppm
R276	4-00748-408	2.000K	Resistor,MetalFilm,1/8W,0.1%,25ppm
R277	4-00178-407	3.83K	Resistor,MetalFilm,1/8W,1%,50PPM

AnalogInputBoardAssembly			
RefNo.	SRSPartNo.	Value	Com ponentDescri ption
R278	4-00200-407	619	Resistor,MetalFilm,1/8W,1%,50PPM
R279	4-00279-407	3.09K	Resistor,MetalFilm,1/8W,1%,50PPM
R280	4-00748-408	2.000K	Resistor,MetalFilm,1/8W,0.1%,25ppm
R281	4-00748-408	2.000K	Resistor,MetalFilm,1/8W,0.1%,25ppm
R282	4-00134-407	1.24K	Resistor,MetalFilm,1/8W,1%,50PPM
R283	4-00130-407	1.00K	Resistor,MetalFilm,1/8W,1%,50PPM
R284	4-00130-407	1.00K	Resistor,MetalFilm,1/8W,1%,50PPM
R285	4-00142-407	100K	Resistor,MetalFilm,1/8W,1%,50PPM
R290	4-00031-401	100	Resistor,CarbonFilm,1/4W,5%
R291	4-00031-401	100	Resistor,CarbonFilm,1/4W,5%
R292	4-00031-401	100	Resistor,CarbonFilm,1/4W,5%
R293	4-00030-401	10	Resistor,CarbonFilm,1/4W,5%
R294	4-00030-401	10	Resistor,CarbonFilm,1/4W,5%
R295	4-00030-401	10	Resistor,CarbonFilm,1/4W,5%
R296	4-00030-401	10	Resistor,CarbonFilm,1/4W,5%
R297	4-00030-401	10	Resistor,CarbonFilm,1/4W,5%
R298	4-00030-401	10	Resistor,CarbonFilm,1/4W,5%
R310	4-00896-407	60.4K	Resistor,MetalFilm,1/8W,1%,50PPM
R311	4-00547-407	18.2K	Resistor,MetalFilm,1/8W,1%,50PPM
R312	4-00705-407	5.62K	Resistor,MetalFilm,1/8W,1%,50PPM
R313	4-00705-407	5.62K	Resistor,MetalFilm,1/8W,1%,50PPM
R314	4-00896-407	60.4K	Resistor,MetalFilm,1/8W,1%,50PPM
R315	4-00363-407	21.5K	Resistor,MetalFilm,1/8W,1%,50PPM
R316	4-00893-407	4.12K	Resistor,MetalFilm,1/8W,1%,50PPM
R317	4-00130-407	1.00K	Resistor,MetalFilm,1/8W,1%,50PPM
R318	4-00166-407	200K	Resistor,MetalFilm,1/8W,1%,50PPM
R320	4-00176-407	3.01K	Resistor,MetalFilm,1/8W,1%,50PPM
R321	4-00130-407	1.00K	Resistor,MetalFilm,1/8W,1%,50PPM
R335	4-00059-401	22K	Resistor,CarbonFilm,1/4W,5%
R350	4-00031-401	100	Resistor,CarbonFilm,1/4W,5%
R351	4-00031-401	100	Resistor,CarbonFilm,1/4W,5%
R352	4-00030-401	10	Resistor,CarbonFilm,1/4W,5%
R353	4-00030-401	10	Resistor,CarbonFilm,1/4W,5%
R354	4-00030-401	10	Resistor,CarbonFilm,1/4W,5%
R355	4-00030-401	10	Resistor,CarbonFilm,1/4W,5%
R356	4-00030-401	10	Resistor,CarbonFilm,1/4W,5%
R357	4-00030-401	10	Resistor,CarbonFilm,1/4W,5%
R360	4-00031-401	100	Resistor,CarbonFilm,1/4W,5%
R361	4-00045-401	2.0K	Resistor,CarbonFilm,1/4W,5%
R362	4-00185-407	4.02K	Resistor,MetalFilm,1/8W,1%,50PPM
R363	4-00161-407	2.49K	Resistor,MetalFilm,1/8W,1%,50PPM
R364	4-00161-407	2.49K	Resistor,MetalFilm,1/8W,1%,50PPM
R370	4-00031-401	100	Resistor,CarbonFilm,1/4W,5%
R371	4-00234-407	10	Resistor,MetalFilm,1/8W,1%,50PPM
R372	4-00188-407	4.99K	Resistor,MetalFilm,1/8W,1%,50PPM
R373	4-00158-407	2.00K	Resistor,MetalFilm,1/8W,1%,50PPM
R374	4-00395-407	316K	Resistor,MetalFilm,1/8W,1%,50PPM
R375	4-00045-401	2.0K	Resistor,CarbonFilm,1/4W,5%
R378	4-00031-401	100	Resistor,CarbonFilm,1/4W,5%
R379	4-00031-401	100	Resistor,CarbonFilm,1/4W,5%
R386	4-00330-407	1.65K	Resistor,MetalFilm,1/8W,1%,50PPM
R387	4-00130-407	1.00K	Resistor,MetalFilm,1/8W,1%,50PPM
R390	4-00158-407	2.00K	Resistor,MetalFilm,1/8W,1%,50PPM
R391	4-00738-407	442	Resistor,MetalFilm,1/8W,1%,50PPM
R392	4-00158-407	2.00K	Resistor,MetalFilm,1/8W,1%,50PPM
R393	4-00738-407	442	Resistor,MetalFilm,1/8W,1%,50PPM
R394	4-00696-407	43.2K	Resistor,MetalFilm,1/8W,1%,50PPM

AnalogInputBoardAssembly			
RefNo.	SRSPartNo.	Value	Com ponentDescri ption
R395	4-00210-407	9.09K	Resistor,MetalFilm,1/8W,1%,50PPM
R396	4-00158-407	2.00K	Resistor,MetalFilm,1/8W,1%,50PPM
R397	4-00158-407	2.00K	Resistor,MetalFilm,1/8W,1%,50PPM
R398	4-00210-407	9.09K	Resistor,MetalFilm,1/8W,1%,50PPM
R399	4-00696-407	43.2K	Resistor,MetalFilm,1/8W,1%,50PPM
R401	4-00471-401	82	Resistor,CarbonFilm,1/4W,5%
R402	4-00471-401	82	Resistor,CarbonFilm,1/4W,5%
R403	4-00138-407	10.0K	Resistor,MetalFilm,1/8W,1%,50PPM
R404	4-00138-407	10.0K	Resistor,MetalFilm,1/8W,1%,50PPM
R440	4-00154-407	150	Resistor,MetalFilm,1/8W,1%,50PPM
R441	4-00154-407	150	Resistor,MetalFilm,1/8W,1%,50PPM
R452	4-00031-401	100	Resistor,CarbonFilm,1/4W,5%
R501	4-00107-402	10	Resistor,CarbonComp,1/2W,5%
R502	4-00107-402	10	Resistor,CarbonComp,1/2W,5%
R511	4-00031-401	100	Resistor,CarbonFilm,1/4W,5%
R512	4-00706-407	237	Resistor,MetalFilm,1/8W,1%,50PPM
R513	4-00269-407	4.64K	Resistor,MetalFilm,1/8W,1%,50PPM
R521	4-00108-402	150	Resistor,CarbonComp,1/2W,5%
R522	4-00108-402	150	Resistor,CarbonComp,1/2W,5%
R541	4-00108-402	150	Resistor,CarbonComp,1/2W,5%
R542	4-00108-402	150	Resistor,CarbonComp,1/2W,5%
R543	4-00215-407	909	Resistor,MetalFilm,1/8W,1%,50PPM
R544	4-00706-407	237	Resistor,MetalFilm,1/8W,1%,50PPM
R545	4-00215-407	909	Resistor,MetalFilm,1/8W,1%,50PPM
R546	4-00706-407	237	Resistor,MetalFilm,1/8W,1%,50PPM
R601	4-00021-401	1.0K	Resistor,CarbonFilm,1/4W,5%
R602	4-00042-401	15K	Resistor,CarbonFilm,1/4W,5%
R603	4-00042-401	15K	Resistor,CarbonFilm,1/4W,5%
R604	4-00042-401	15K	Resistor,CarbonFilm,1/4W,5%
R605	4-00021-401	1.0K	Resistor,CarbonFilm,1/4W,5%
R606	4-00021-401	1.0K	Resistor,CarbonFilm,1/4W,5%
R690	4-00054-401	200K	Resistor,CarbonFilm,1/4W,5%
R701	4-00031-401	100	Resistor,CarbonFilm,1/4W,5%
SO101	1-00173-150	8PINMACH	Socket,THRU-HOLE
SO102	1-00173-150	8PINMACH	Socket,THRU-HOLE
TP100	1-00143-101	TESTJACK	VerticalTestJack
TP101	1-00143-101	TESTJACK	VerticalTestJack
TP201	1-00143-101	TESTJACK	VerticalTestJack
TP202	1-00143-101	TESTJACK	VerticalTestJack
TP203	1-00143-101	TESTJACK	VerticalTestJack
TP204	1-00143-101	TESTJACK	VerticalTestJack
TP301	1-00143-101	TESTJACK	VerticalTestJack
TP302	1-00143-101	TESTJACK	VerticalTestJack
TP303	1-00143-101	TESTJACK	VerticalTestJack
TP304	1-00143-101	TESTJACK	VerticalTestJack
TP401	1-00143-101	TESTJACK	VerticalTestJack
TP402	1-00143-101	TESTJACK	VerticalTestJack
TP403	1-00143-101	TESTJACK	VerticalTestJack
TP404	1-00143-101	TESTJACK	VerticalTestJack
TP501	1-00143-101	TESTJACK	VerticalTestJack
TP502	1-00143-101	TESTJACK	VerticalTestJack
TP511	1-00143-101	TESTJACK	VerticalTestJack
TP521	1-00143-101	TESTJACK	VerticalTestJack
TP522	1-00143-101	TESTJACK	VerticalTestJack
TP531	1-00143-101	TESTJACK	VerticalTestJack
TP532	1-00143-101	TESTJACK	VerticalTestJack
TP541	1-00143-101	TESTJACK	VerticalTestJack

AnalogInputBoardAssembly			
RefNo.	SRSPartNo.	Value	Com ponentDescri ption
TP542	1-00143-101	TESTJACK	VerticalTestJack
TP551	1-00143-101	TESTJACK	VerticalTestJack
TP690	1-00143-101	TESTJACK	VerticalTestJack
U101	3-00246-340	NPD5564	IntegratedCircuit(Thru-holePkg)
U102	3-00817-340	NPD5566	IntegratedCircuit(Thru-holePkg)
U103	3-00461-340	OPA2604	IntegratedCircuit(Thru-holePkg)
U104	3-00461-340	OPA2604	IntegratedCircuit(Thru-holePkg)
U105	3-00768-340	5534TIONLY	IntegratedCircuit(Thru-holePkg)
U106	3-00143-340	LM393	IntegratedCircuit(Thru-holePkg)
U107	3-00143-340	LM393	IntegratedCircuit(Thru-holePkg)
U108	3-00130-340	5532A	IntegratedCircuit(Thru-holePkg)
U109	3-00461-340	OPA2604	IntegratedCircuit(Thru-holePkg)
U201	3-00385-340	74HC4053	IntegratedCircuit(Thru-holePkg)
U202	3-00768-340	5534TIONLY	IntegratedCircuit(Thru-holePkg)
U203	3-00385-340	74HC4053	IntegratedCircuit(Thru-holePkg)
U204	3-00768-340	5534TIONLY	IntegratedCircuit(Thru-holePkg)
U206	3-00768-340	5534TIONLY	IntegratedCircuit(Thru-holePkg)
U207	3-00371-340	DG444	IntegratedCircuit(Thru-holePkg)
U208	3-00371-340	DG444	IntegratedCircuit(Thru-holePkg)
U220	3-00143-340	LM393	IntegratedCircuit(Thru-holePkg)
U230	3-00130-340	5532A	IntegratedCircuit(Thru-holePkg)
U231	3-00130-340	5532A	IntegratedCircuit(Thru-holePkg)
U232	3-00130-340	5532A	IntegratedCircuit(Thru-holePkg)
U233	3-00130-340	5532A	IntegratedCircuit(Thru-holePkg)
U234	3-00768-340	5534TIONLY	IntegratedCircuit(Thru-holePkg)
U240	3-00130-340	5532A	IntegratedCircuit(Thru-holePkg)
U241	3-00130-340	5532A	IntegratedCircuit(Thru-holePkg)
U242	3-00130-340	5532A	IntegratedCircuit(Thru-holePkg)
U243	3-00130-340	5532A	IntegratedCircuit(Thru-holePkg)
U244	3-00130-340	5532A	IntegratedCircuit(Thru-holePkg)
U310	3-00130-340	5532A	IntegratedCircuit(Thru-holePkg)
U317	3-00886-340	OPA2134	IntegratedCircuit(Thru-holePkg)
U360	3-00116-325	78L05	Transistor,TO-92Package
U361	3-00059-340	AD7542JN	IntegratedCircuit(Thru-holePkg)
U362	3-00091-340	LF412	IntegratedCircuit(Thru-holePkg)
U370	3-00089-340	LF357	IntegratedCircuit(Thru-holePkg)
U371	3-00089-340	LF357	IntegratedCircuit(Thru-holePkg)
U374	3-00130-340	5532A	IntegratedCircuit(Thru-holePkg)
U376	3-00385-340	74HC4053	IntegratedCircuit(Thru-holePkg)
U391	3-00143-340	LM393	IntegratedCircuit(Thru-holePkg)
U392	3-00143-340	LM393	IntegratedCircuit(Thru-holePkg)
U401	3-00392-340	PCM1750P	IntegratedCircuit(Thru-holePkg)
U402	3-00155-340	74HC04	IntegratedCircuit(Thru-holePkg)
U403	3-00091-340	LF412	IntegratedCircuit(Thru-holePkg)
U501	3-00118-325	78L15	Transistor,TO-92Package
U502	3-00124-325	79L15	Transistor,TO-92Package
U511	3-00096-340	LM317L	IntegratedCircuit(Thru-holePkg)
U521	3-00116-325	78L05	Transistor,TO-92Package
U522	3-00122-325	79L05	Transistor,TO-92Package
U531	3-00114-329	7815	VoltageReg.,TO-220(TAB)Package
U532	3-00120-329	7915	VoltageReg.,TO-220(TAB)Package
U541	3-00096-340	LM317L	IntegratedCircuit(Thru-holePkg)
U542	3-00100-340	LM337L	IntegratedCircuit(Thru-holePkg)
U551	3-00346-329	7812	VoltageReg.,TO-220(TAB)Package
U601	3-00265-340	74HC595	IntegratedCircuit(Thru-holePkg)
U602	3-00265-340	74HC595	IntegratedCircuit(Thru-holePkg)
U603	3-00265-340	74HC595	IntegratedCircuit(Thru-holePkg)

AnalogInputBoardAssembly			
RefNo.	SRSPartNo.	Value	Com ponentDescri ption
U604	3-00064-340	CA3081	Inte gratedCircuit (Thru-holePk g)
U605	3-00049-340	74HC74	IntegratedCircuit(Thru-holePkg)
U606	3-00604-342	2KX8SERIAL	EPROM·PROM,I.C.
U607	3-00694-343	SR780U607	GAL/PAL,I.C.
U608	3-00155-340	74HC04	IntegratedCircuit(Thru-holePkg)
U609	3-00037-340	74HC138	IntegratedCircuit(Thru-holePkg)
U610	3-00265-340	74HC595	IntegratedCircuit(Thru-holePkg)
U630	3-00343-340	74ALS32	IntegratedCircuit(Thru-holePkg)
U690	3-00116-325	78L05	Transistor,TO-92Package
Z0	0-00012-007	TO-220	HeatSinks
Z0	0-00043-011	4-40KEP	Nut,Kep
Z0	0-00209-021	4-40X3 8PP	Screw,PanheadPhillips
Z0	0-00231-043	#4SHOULDER	Washer,nylon
Z0	0-00243-003	TO-220	Insulators
Z0	0-00373-000	CARDEJECTOR	Hardware,Misc.
Z0	0-00516-042	BNC	Washer,lock

AnalyzerBackplanePartsList

ThissectioncoversschematicsM780-1throughM780-4inChapter5.

AnalyzerBackplaneAssembly			
RefNo.	SRSPartNo.	Value	Com ponentDescri ption
C1	5-00023-529	.1U	Ca p,Monol ythicCeramic,50V,20%,Z5U
C2	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C3	5-00023-529	.1U	Cap,MonolythicCeramic,50V,20%,Z5U
C4C	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C5C	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C6	5-00134-529	100P	Cap,MonolythicCeramic,50V,20%,Z5U
C7C	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C8C	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C9	5-00134-529	100P	Cap,MonolythicCeramic,50V,20%,Z5U
C10C	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C11C	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C12	5-00134-529	100P	Cap,MonolythicCeramic,50V,20%,Z5U
C13C	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C14C	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C15	5-00134-529	100P	Cap,MonolythicCeramic,50V,20%,Z5U
C16C	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C17C	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C18C	5-00134-529	100P	Cap,MonolythicCeramic,50V,20%,Z5U
C19C	5-00134-529	100P	Cap,MonolythicCeramic,50V,20%,Z5U
C20C	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
C21	5-00134-529	100P	Cap,MonolythicCeramic,50V,20%,Z5U
C22	5-00219-529	.01U	Cap,MonolythicCeramic,50V,20%,Z5U
D1B	3-00610-303	GREENRTANGLE	LED,T1Package
J1C	1-00233-120	RTANGLE	Connector,BNC
J2C	1-00233-120	RTANGLE	Connector,BNC
J3C	1-00233-120	RTANGLE	Connector,BNC
J4C	1-00233-120	RTANGLE	Connector,BNC
J5C	1-00233-120	RTANGLE	Connector,BNC
J6C	1-00233-120	RTANGLE	Connector,BNC
J10C	1-00235-108	96PINVERTICAL	DINConnector,Female
J11C	1-00235-108	96PINVERTICAL	DINConnector,Female
J20C	1-00235-108	96PINVERTICAL	DINConnector,Female
J30C	1-00224-141	STRAIGHTPLUG	SMBConnector
J31C	1-00224-141	STRAIGHTPLUG	SMBConnector
J33C	1-00224-141	STRAIGHTPLUG	SMBConnector
J34C	1-00224-141	STRAIGHTPLUG	SMBConnector
J35C	1-00224-141	STRAIGHTPLUG	SMBConnector
J36C	1-00224-141	STRAIGHTPLUG	SMBConnector
J40C	1-00235-108	96PINVERTICAL	DINConnector,Female
JP5B	1-00242-130	20PINELHVERT	Connector,Male
JP11C	1-00272-130	34PINDI	Connector,Male
JP13C	1-00272-130	34PINDI	Connector,Male
JP50C	1-00251-130	10PINDIL	Connector,Male
PC1A	7-00524-701	SR780MOTHER	PrintedCircuitBoard
PC1B	7-00626-701	MEGAPLATD/D	PrintedCircuitBoard
PC1C	7-00797-701	SR785BACKPLANE	PrintedCircuitBoard
R1A	4-00772-402	33	Resistor,CarbonComp,1/2W,5%
R1B	4-00098-401	680	Resistor,CarbonFilm,1/4W,5%
Z0	0-00011-057	GROMMET	Grommet
Z0	0-00014-002	6J4	Power_EntryHardware
Z0	0-00043-011	4-40KEP	Nut,Kep

AnalyzerBackplaneAssembly			
RefNo.	SRSPartNo.	Value	Com ponentDescri ption
Z0	0-00079-031	4-40X3/16M/F	Standoff
Z0	0-00081-032	320882	Termination
Z0	0-00089-033	4"	Tie
Z0	0-00098-042	#6LOCK	Washer,lock
Z0	0-00114-050	10-1/8"#18	Wire#18UL1007Stripped3/8x3/8NoTin
Z0	0-00135-050	7-5/8"#18	Wire#18UL1007Stripped3/8x3/8NoTin
Z0	0-00149-020	4-40X1/4PF	Screw,FlatheadPhillips
Z0	0-00150-026	4-40X1/4PF	Screw,Black,AllTypes
Z0	0-00157-000	BNCPLUG	Hardware,Misc.
Z0	0-00167-023	6-32X1/2RP	Screw,RoundheadPhillips
Z0	0-00179-000	RIGHTFOOT	Hardware,Misc.
Z0	0-00180-000	LEFTFOOT	Hardware,Misc.
Z0	0-00181-020	6-32X1/4PF	Screw,FlatheadPhillips
Z0	0-00185-021	6-32X3/8PP	Screw,PanheadPhillips
Z0	0-00187-021	4-40X1/4PP	Screw,PanheadPhillips
Z0	0-00195-020	6-32X3/8PF	Screw,FlatheadPhillips
Z0	0-00204-000	REARFOOT	Hardware,Misc.
Z0	0-00209-021	4-40X3/8PP	Screw,PanheadPhillips
Z0	0-00212-021	6-32X2PP	Screw,PanheadPhillips
Z0	0-00248-026	10-32X3/8TRUSSP	Screw,Black,AllTypes
Z0	0-00249-021	6-32X1-1/2PP	Screw,PanheadPhillips
Z0	0-00256-043	#6SHOULDER	Washer,nylon
Z0	0-00259-021	4-40X1/2"PP	Screw,PanheadPhillips
Z0	0-00280-050	9"#18	Wire#18UL1007Stripped3/8x3/8NoTin
Z0	0-00308-021	4-40X7/8PP	Screw,PanheadPhillips
Z0	0-00327-050	8"#18WHITE	Wire#18UL1007Stripped3/8x3/8NoTin
Z0	0-00328-050	8"#18RED	Wire#18UL1007Stripped3/8x3/8NoTin
Z0	0-00329-050	8"#18BLACK	Wire#18UL1007Stripped3/8x3/8NoTin
Z0	0-00336-027	#4X1/4PP-B	Screw,SheetMetal
Z0	0-00351-029	4-40X1/4TRUSSPH	Screw,TrussPhillips
Z0	0-00371-026	4-40X3/16PF	Screw,Black,AllTypes
Z0	0-00377-004	SR760/830/780	Knobs
Z0	0-00378-004	CAP760/830/780	Knobs
Z0	0-00382-000	CARDGUIDE4.5"	Hardware,Misc.
Z0	0-00390-024	1-72X1/4	Screw,Slotted
Z0	0-00391-010	1-72X5/32X3/64	Nut,Hex
Z0	0-00407-032	SOLDRSLVRG174	Termination
Z0	0-00415-031	4-40X1/2M/F	Standoff
Z0	0-00417-057	GROMMETSTRIP	Grommet
Z0	0-00471-021	4-40X1"PP	Screw,PanheadPhillips
Z0	0-00472-018	1-329631-2	JamNut
Z0	0-00481-000	BUMPER/CORDWRP	Hardware,Misc.
Z0	0-00500-000	554808-1	Hardware,Misc.
Z0	0-00501-042	1-329632-2	Washer,lock
Z0	0-00502-000	CARDGUIDE6"	Hardware,Misc.
Z0	0-00503-000	CARDGUIDE2.5"	Hardware,Misc.
Z0	0-00505-064	10-32X1/4	Screw,SocketHeadShoulder
Z0	0-00506-000	HANDLE5	Hardware,Misc.
Z0	0-00507-000	90MM12V	Hardware,Misc.
Z0	0-00508-000	CARDGUIDE5"	Hardware,Misc.
Z0	0-00517-000	BINDINGPOST	Hardware,Misc.
Z0	0-00519-027	#4X3/16PP-B	Screw,SheetMetal
Z0	0-00523-048	5-5/8"#18	Wire,#18UL1015Strip3/8x3/8NoTin
Z0	0-00525-050	8-1/4"#18	Wire#18UL1007Stripped3/8x3/8NoTin
Z0	0-00527-050	13"#18	Wire#18UL1007Stripped3/8x3/8NoTin
Z0	0-00536-032	31894	Termination
Z0	0-00598-031	4-40X1-3/8M/F	Standoff

AnalyzerBackplaneAssembly			
RefNo.	SRSPartNo.	Value	Com ponentDescri ption
Z0	0-00618-025	10-32X1.2	Screw,AllenHead
Z0	1-00073-120	INSL	Connector,BNC
Z0	1-00120-113	3PIN,18AWG/OR	Connector,Amp,MTA-156
Z0	1-00138-130	5PINSI	Connector,Male
Z0	1-00141-171	5PINSIL	CableAssembly,Ribbon
Z0	1-00153-113	11PIN,18AWG/OR	Connector,Amp,MTA-156
Z0	1-00246-130	20PINELHSHR	Connector,Male
Z0	1-00252-171	34COND	CableAssembly,Ribbon
Z0	1-00253-171	20COND	CableAssembly,Ribbon
Z0	1-00254-113	2PIN,22AWG RD	Connector,Amp,MTA-156
Z0	1-00273-171	10CONDDIL	CableAssembly,Ribbon
Z0	1-00274-171	20CONDX8"	CableAssembly,Ribbon
Z0	2-00034-220	ENA1J-B20	SOFTPOT
Z0	2-00040-211	DPDT	Switch,Rocker
Z0	3-00600-341	128KX8-20	STATICRAM,I.C.
Z0	4-00541-435	130V 1200A	Varistor,ZincOxideNonlinearResistor
Z0	5-00298-568	.01U	Cap,Ceramic50VSMT(1206)+/-10%X7R
Z0	5-00334-569	.1U/T35	Cap,Tantalum,SMT(allcasesizes)
Z0	6-00043-611	1.5A3AG	Fuse
Z0	6-00176-610	SR780	Transformer
Z0	6-00212-630	1"X.25"CYL	FerriteBeads
Z0	7-00124-720	TRANSCOVER2-MOD	FabricatedPart
Z0	7-00539-720	SR780-5	FabricatedPart
Z0	7-00540-720	SR780-6	FabricatedPart
Z0	7-00544-720	SR780-10	FabricatedPart
Z0	7-00545-720	SR780-12	FabricatedPart
Z0	7-00546-720	SR780-13	FabricatedPart
Z0	7-00547-720	SR780-14	FabricatedPart
Z0	7-00549-720	SR780-16	FabricatedPart
Z0	7-00550-720	SR780-17	FabricatedPart
Z0	7-00551-721	SR780-18	MachinedPart
Z0	7-00552-721	SR780-19	MachinedPart
Z0	7-00553-720	SR780-20	FabricatedPart
Z0	7-00554-720	SR780-21	FabricatedPart
Z0	7-00555-720	SR780-23	FabricatedPart
Z0	7-00621-720	SR780-28	FabricatedPart
Z0	7-00623-720	SR780-30	FabricatedPart
Z0	7-00624-720	SR780-31/32	FabricatedPart
Z0	7-00625-720	SR780-7	FabricatedPart
Z0	7-00627-740	SR780-33,-34,	Keypad,ConductiveRubber
Z0	7-00628-701	MEGAKEYPAD	PrintedCircuitBoard
Z0	7-00630-701	SIMM	PrintedCircuitBoard
Z0	7-00632-735	SR780-35	InjectionMoldedPlastic
Z0	7-00662-714	SR780-39	Extrusion
Z0	7-00673-721	SR780-44	MachinedPart
Z0	7-00674-721	SR780-46	MachinedPart
Z0	7-00675-721	SR780-47	MachinedPart
Z0	7-00723-720	SR780-48	FabricatedPart
Z0	7-00800-709	SR785	LexanOverlay
Z0	8-00045-840	9"Z-AXIS	CRTDisplay
Z0	9-00267-917	GENERIC	ProductLabels
Z0	9-00815-924	DBL-SIDED1/2"	Tape,Alltypes

DemoFilterBoardPartsList

DemoFilterBoardAssembly			
RefNo.	SRSPartNo.	Value	Com ponentDescri ption
C1	5-00149-545	.01U	Ca pacitor,Monol ythicCeramic,COG,1%
C2	5-00149-545	.01U	Capacitor,MonolythicCeramic,COG,1%
C3	5-00149-545	.01U	Capacitor,MonolythicCeramic,COG,1%
C4	5-00149-545	.01U	Capacitor,MonolythicCeramic,COG,1%
PC1	7-00672-701	SR780DEMO	PrintedCircuitBoard
R1	4-00600-407	15.8K	Resistor,MetalFilm,1/8W,1%,50PPM
R2	4-00600-407	15.8K	Resistor,MetalFilm,1/8W,1%,50PPM
R3	4-00303-407	7.87K	Resistor,MetalFilm,1/8W,1%,50PPM
Z0	0-00196-052	1-1 2"X#22	Wire#22UL1007
Z0	1-00003-120	BNC	Connector,BNC

MiscellaneousPartsList

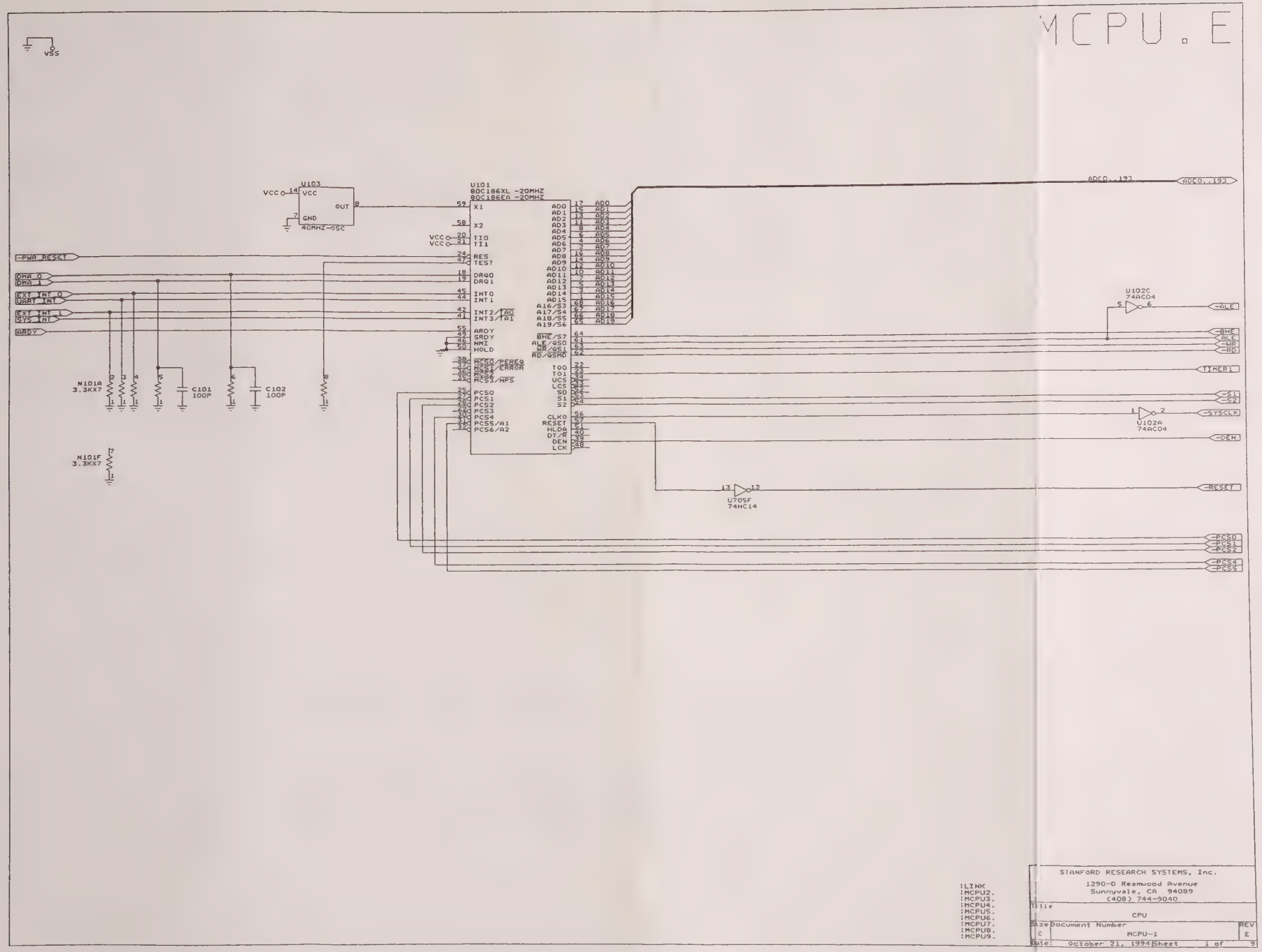
MiscellaneousAssembly			
RefNo.	SRSPartNo.	Value	Com ponentDescri ption
U301	3-00552-342	27C010-70DC	EPROM/PROM,I.C.
U302	3-00552-342	27C010-70DC	EPROM/PROM,I.C.
U303	3-00552-342	27C010-70DC	EPROM/PROM,I.C.
U304	3-00552-342	27C010-70DC	EPROM/PROM,I.C.
U305	3-00552-342	27C010-70DC	EPROM/PROM,I.C.
U306	3-00552-342	27C010-70DC	EPROM/PROM,I.C.
U801	3-00639-342	27C020-120	EPROM/PROM,I.C.
U802	3-00639-342	27C020-120	EPROM/PROM,I.C.
Z0	0-00187-021	4-40X1/4PP	Screw,PanheadPhillips
Z0	3-00599-350	8MB2X32-60	SIMM(DynamicRam)
Z0	3-00612-350	4MSX32-80	SIMM(DynamicRam)
Z0	3-00613-350	32MB8X32-602K	SIMM(DynamicRam)
Z0	7-00405-720	SR770-11	FabricatedPart
Z0	7-00542-720	SR780-8	FabricatedPart
Z0	7-00543-720	SR780-9	FabricatedPart
Z0	7-00548-720	SR780-15	FabricatedPart
Z0	7-00620-720	SR780-26	FabricatedPart
Z0	7-00631-720	SR780-25	FabricatedPart

Chapter5

SchematicDiagrams

InThisChapter

Assembly	Board#	Schematic#
CPUBoard	7-00522	MCPU-1throughMCPU-9
Video/IOBoard	7-00523	MVID-10throughMVID-14
PowerSupply	7-00526	MPWR-1throughMPWR-2
SystemBackplane	7-00524	MBKPL-20throughMBKPL-23
DiskCard	7-00626	MBKPL-24
KeypadBoard	7-00628	MKEY-1
DSPBoard	7-00494	D780-1throughD780-9
AnalogInputBoards	7-00616	A780-1throughA780-7
AnalyzerBackplane	7-00614	M780-1throughM780-4
DemoFilter	7-00672	F780-1



:LINK
:MCPU2.
:MCPU3.
:MCPU4.
:MCPU5.
:MCPU6.
:MCPU7.
:MCPU8.
:MCPU9.

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Title		
CPU		
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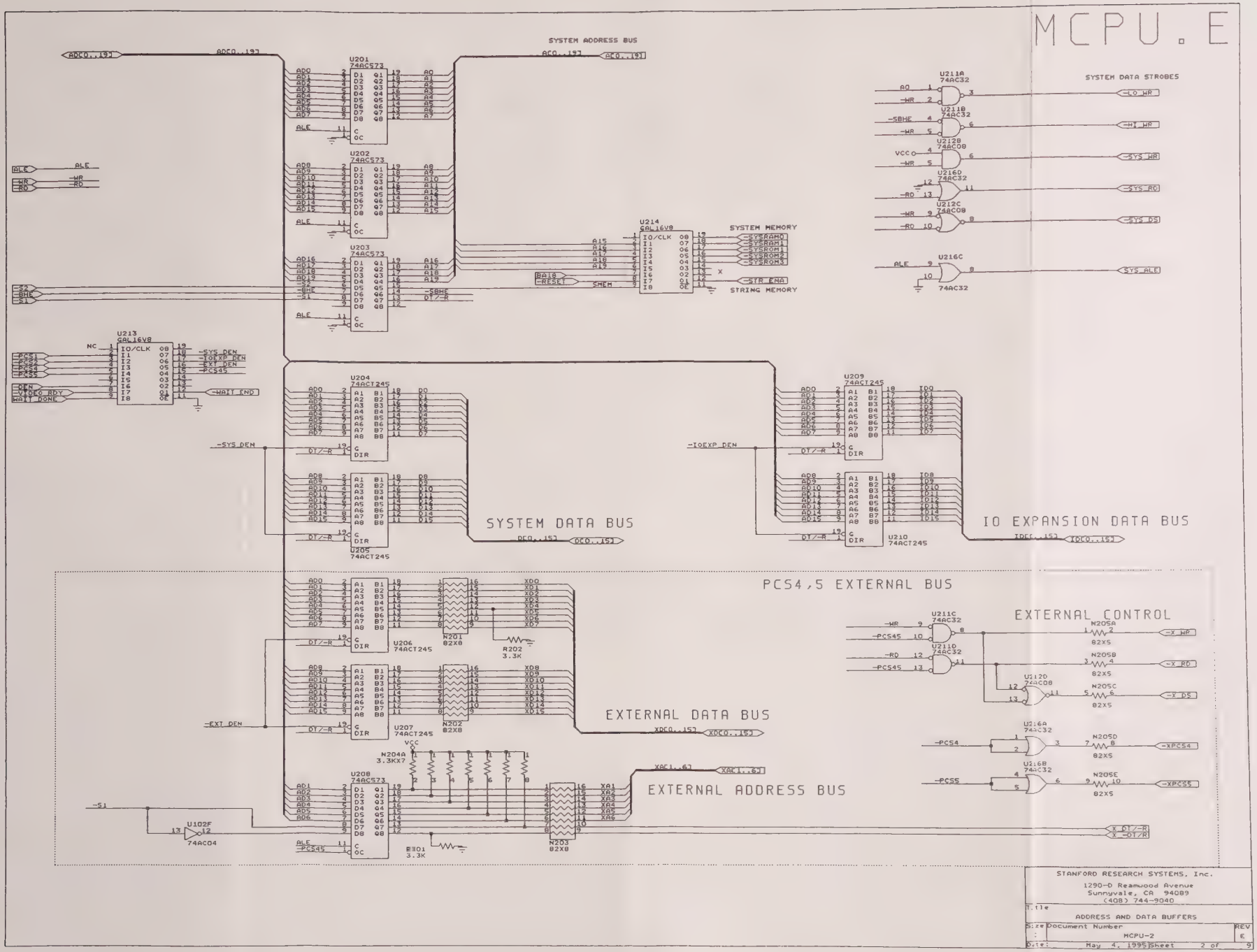

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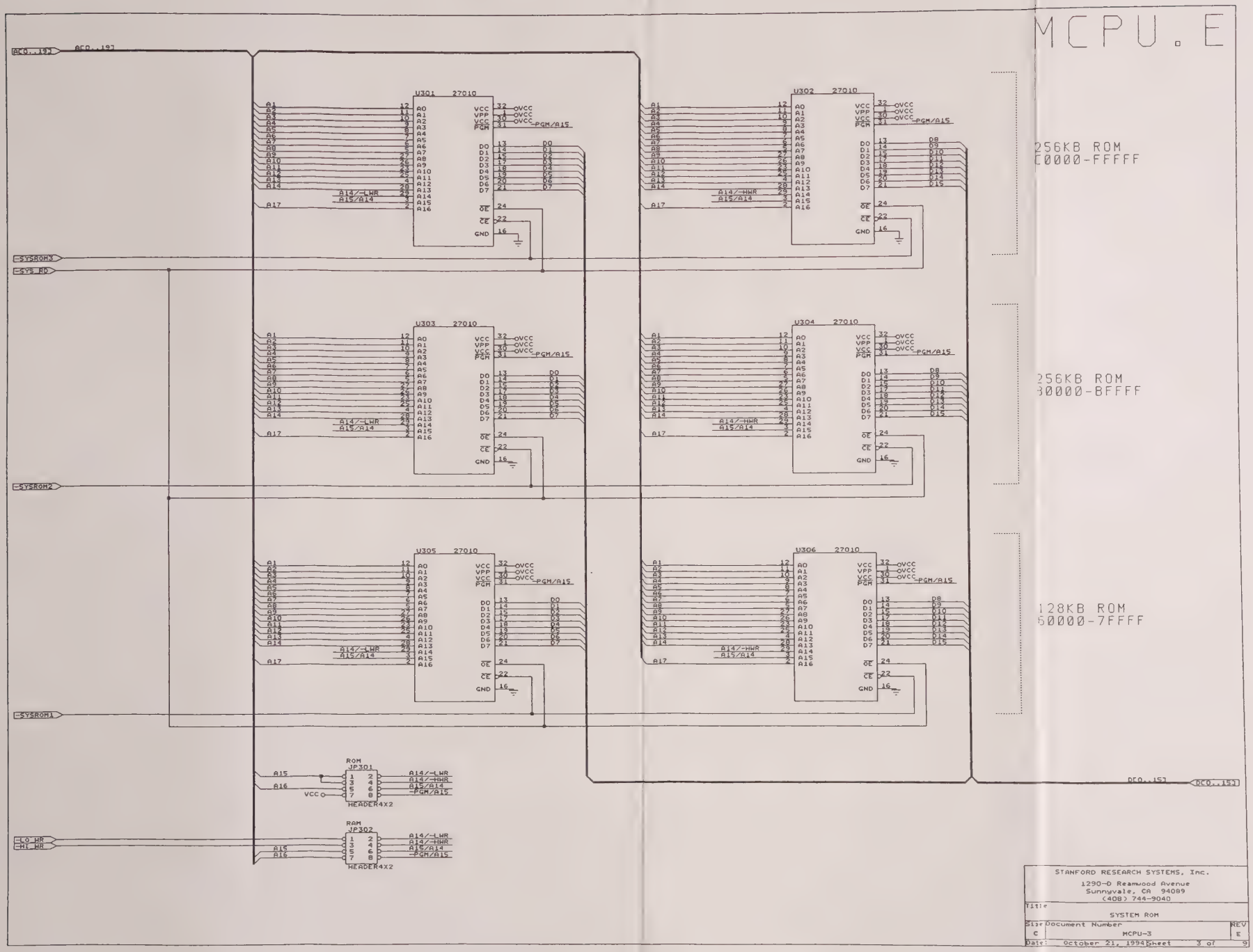
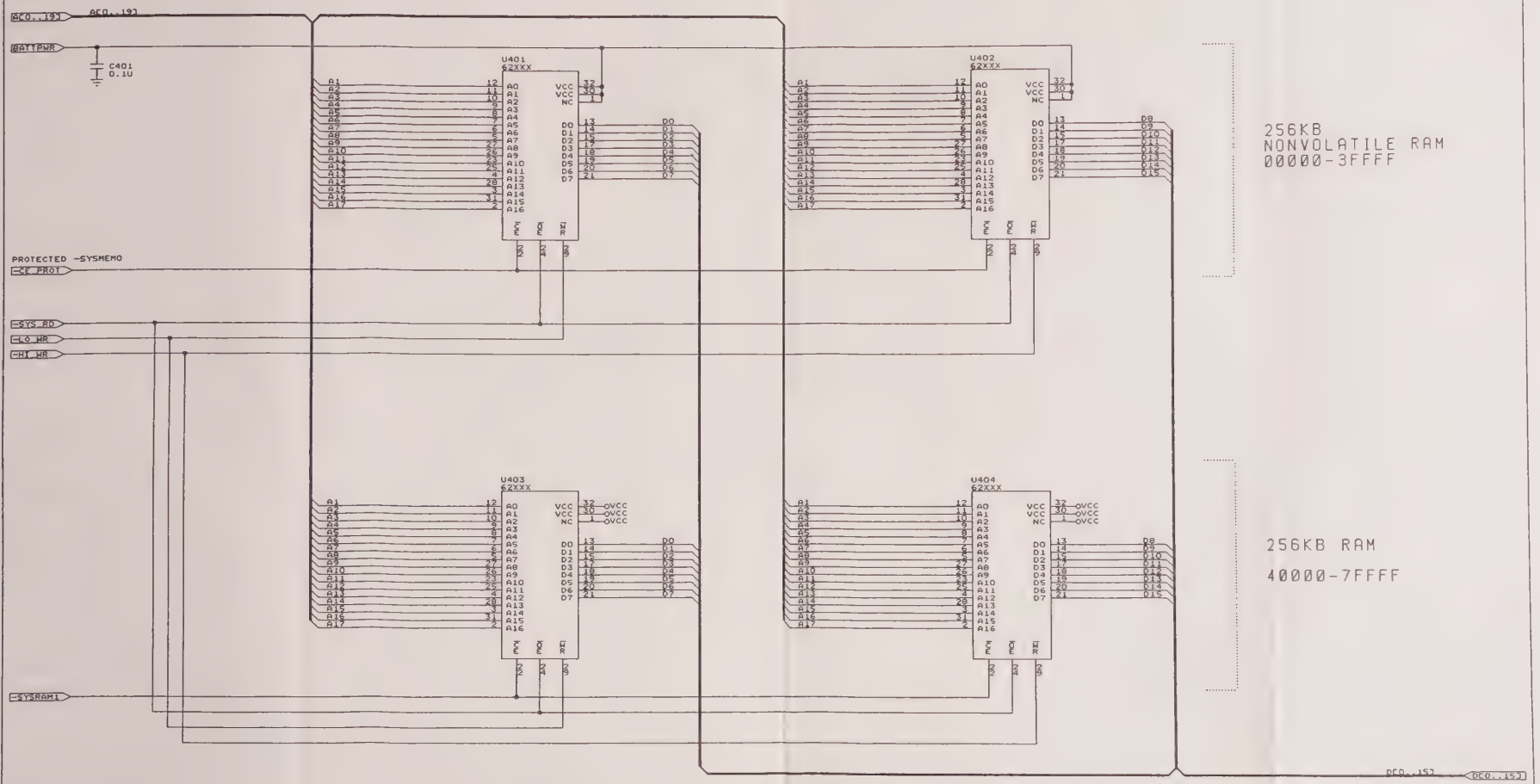
(408) 744-9040

Title: ADDRESS AND DATA BUFFERS

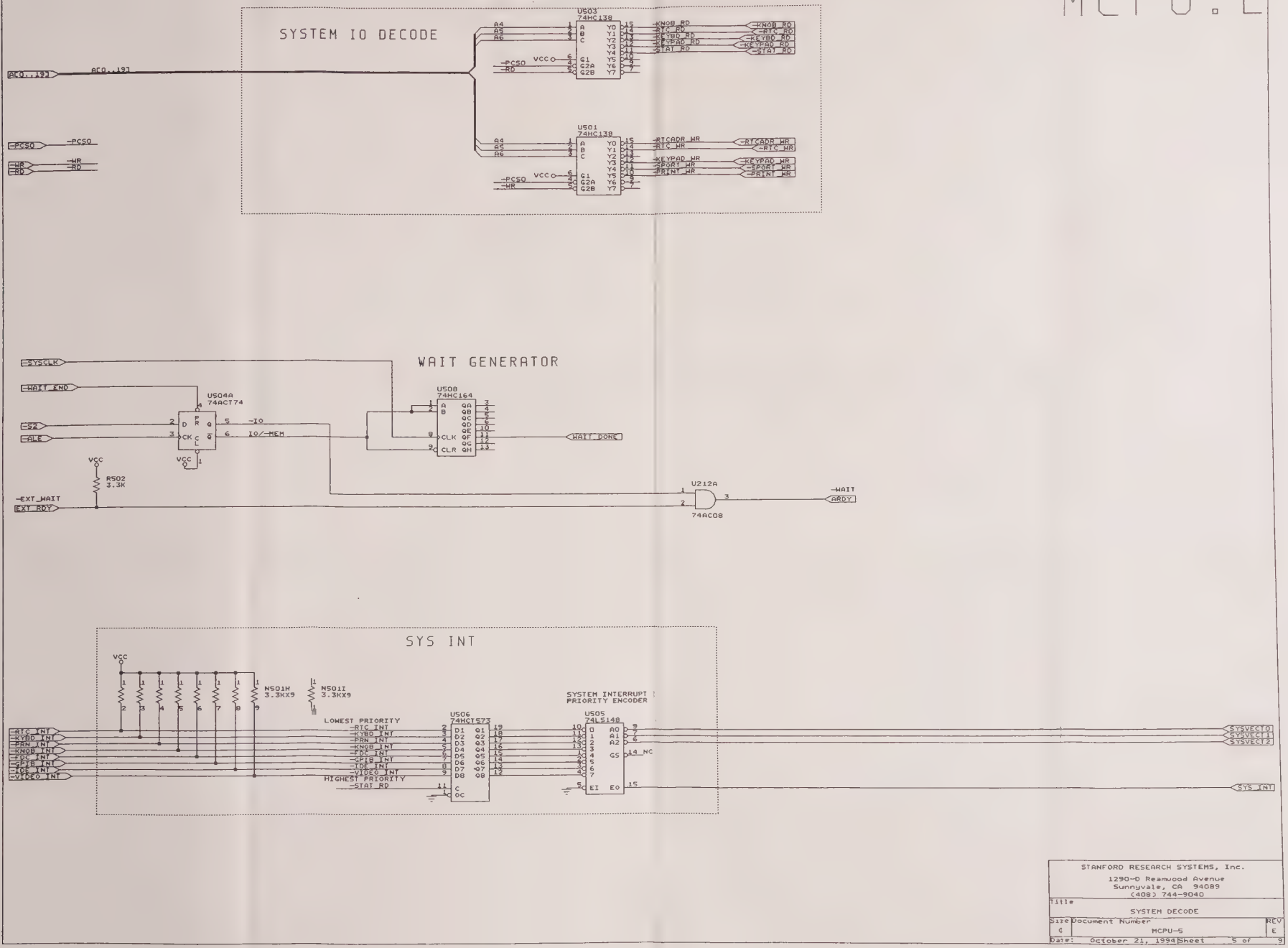
Size: Document Number: MCPU-2 REV: E

Date: May 4, 1995 Sheet 2 of 9

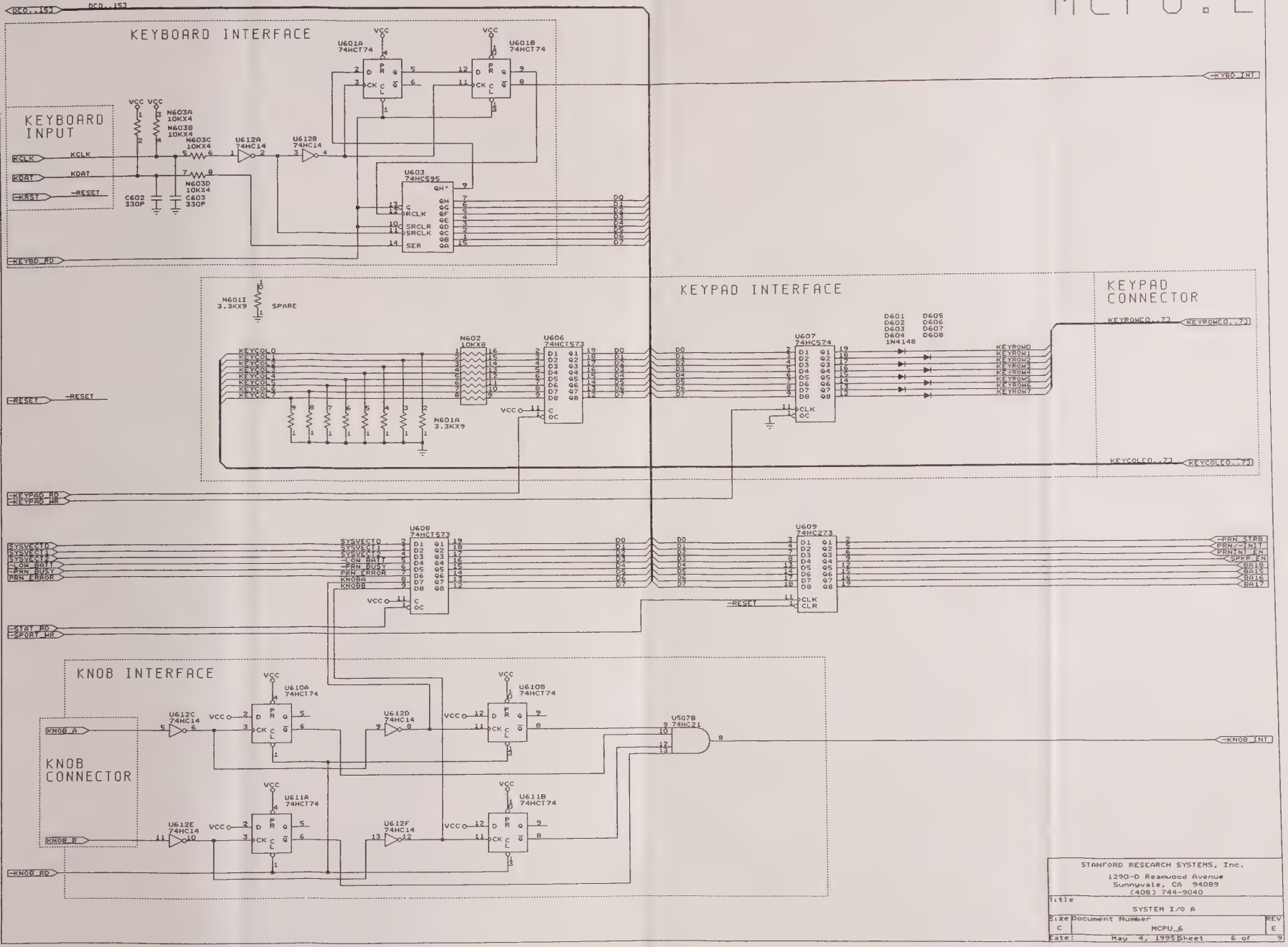

MCPU.E
AD0..19
AD0..19
U301 27010
U302 27010
U303 27010
U304 27010
U305 27010
U306 27010
A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 A11 A12 A13 A14 A15 A16 A17
D0 D1 D2 D3 D4 D5 D6 D7
VCC VPP VCC PGM
OVCC
-PGM/A15
A14/-LWR
A15/A14
A14/-HWR
OE CE GND
256KB ROM
C0000-FFFFF
256KB ROM
80000-BFFFF
128KB ROM
40000-7FFFF
-SYSROM3
-SYS_RD
-SYSROM2
-SYSROM1
AD0..15
AD0..15
ROM
JP301
RAM
JP302
HEADER4X2
VCC
-LO_WR
-HI_WR
STANFORD RESEARCH SYSTEMS, Inc.
1290-D Reamwood Avenue
Sunnyvale, CA 94089
(408) 744-9040
Title
SYSTEM ROM
Size C
Document Number MCPU-3
REV E
Date: October 21, 1994 Sheet 3 of 9

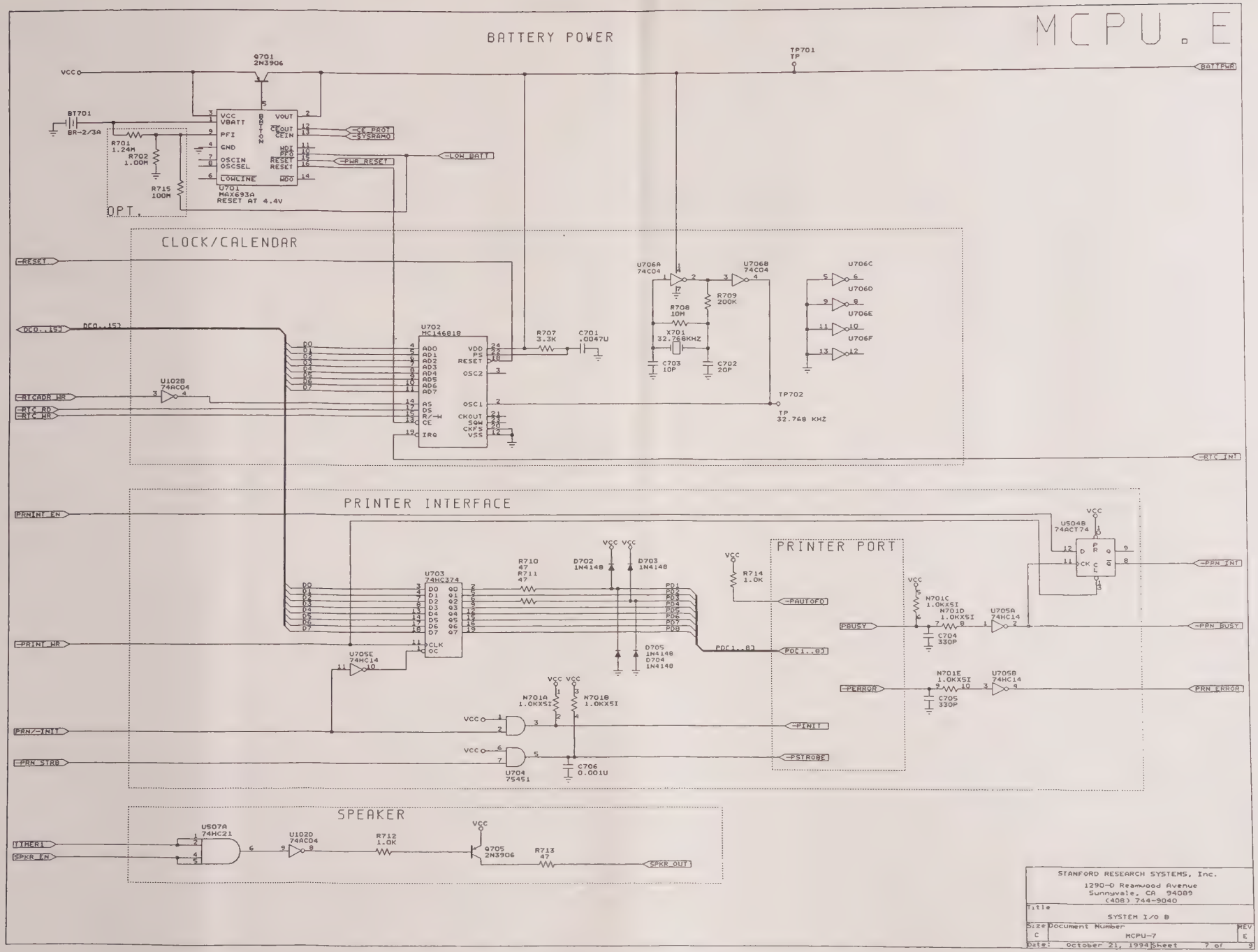


STANFORD RESEARCH SYSTEMS, Inc.	
1290-D Reamwood Avenue Sunnyvale, CA 94089 (408) 744-9040	
Title	SYSTEM RAM
Size: C	Document Number: MCPU-4
REV: E	
Date: October 21, 1994	Sheet 4 of 9

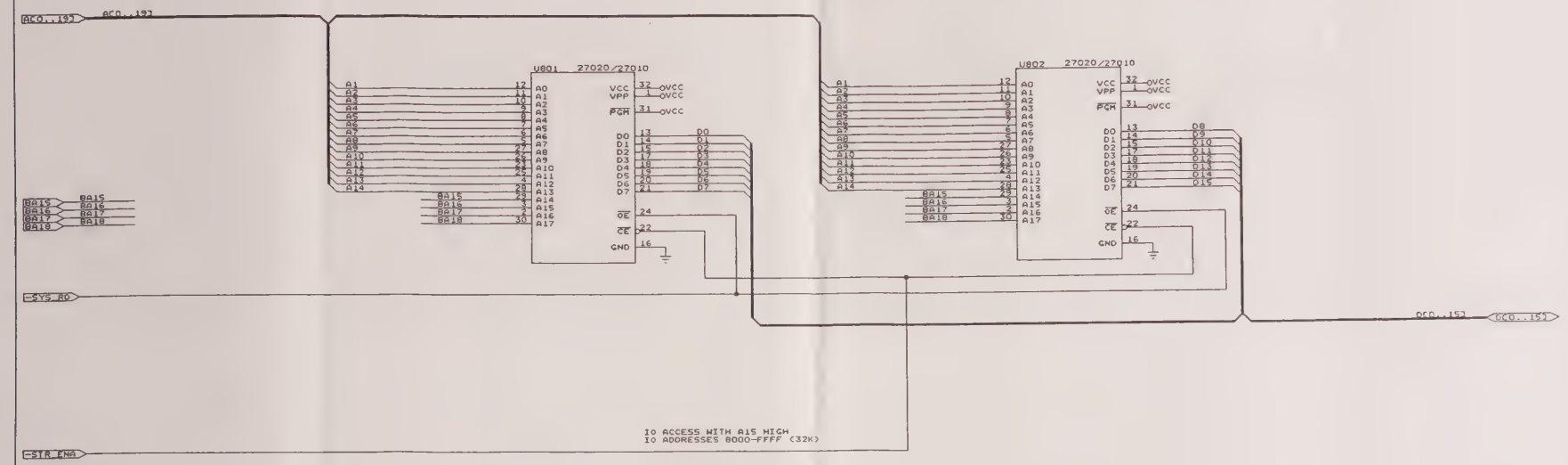


STANFORD RESEARCH SYSTEMS, Inc.		
1290-D Reamwood Avenue Sunnyvale, CA 94089 (408) 744-9040		
Title	SYSTEM DECODE	
Size: C	Document Number: MCPU-S	REV: E
Date: October 21, 1994	Sheet 5 of 9	

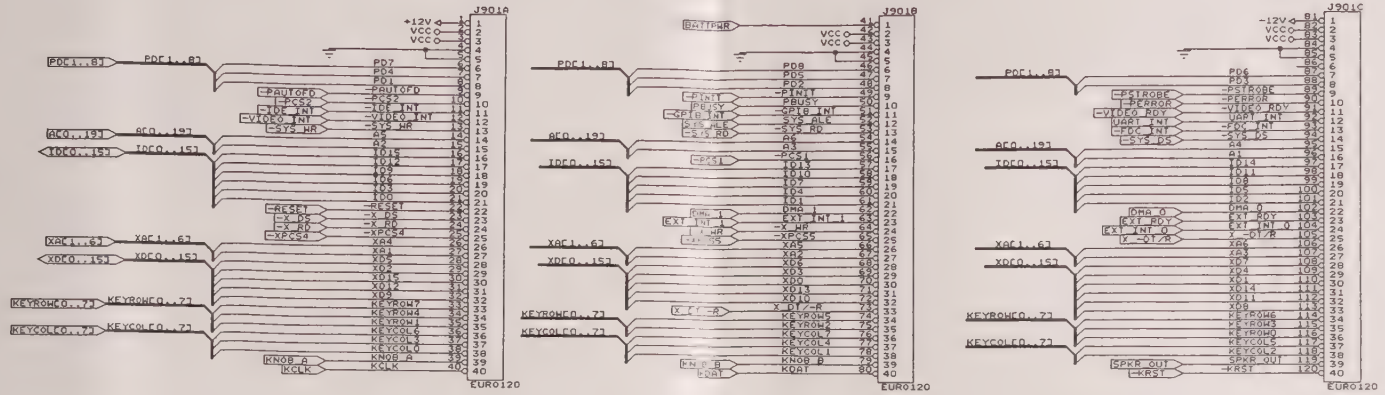

KEYBOARD INTERFACE
KEYBOARD INPUT
KEYPAD INTERFACE
KEYPAD CONNECTOR
KNOB INTERFACE
KNOB CONNECTOR
STANFORD RESEARCH SYSTEMS, Inc.
1290-D Reamwood Avenue
Sunnyvale, CA 94089
(408) 744-9040
SYSTEM I/O A
MCPU_6
May 4, 1995
Sheet 6 of 9

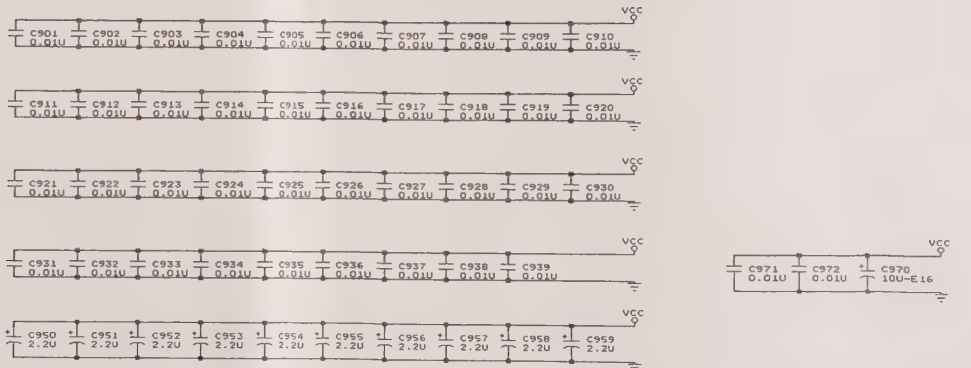

MCPU.E
BATTERY POWER
CLOCK/CALENDAR
PRINTER INTERFACE
PRINTER PORT
SPEAKER
OPT.
U701 MAX693A RESET AT 4.4V
U702 MC146818
U703 74HC374
U704 75451
U504B 74ACT74
U507A 74HC21
Q701 2N3906
Q705 2N3906
X701 32.768KHZ
TP701 TP
TP702 TP 32.768 KHZ
BATTPWR
-CE_PROT
-SYSRAMO
-LOW_BATT
-PWR_RESET
-RESET
-RTC_INT
-PRN_INT
-PRN_BUSY
-PRN_ERROR
-PAUTOFD
-PINIT
-PSTROBE
PRNINT_EN
-PRINT_WR
PRN/-INIT
-PRN_STRB
TIMER1
SPKR_EN
SPKR_OUT
STANFORD RESEARCH SYSTEMS, Inc.
1290-D Reamwood Avenue
Sunnyvale, CA 94089
(408) 744-9040
Title
SYSTEM I/O B
Size C
Document Number MCPU-7
REV E
Date: October 21, 1994
Sheet 7 of 9

STRING ROM

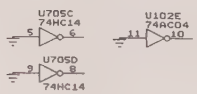


STANFORD RESEARCH SYSTEMS, Inc.		
1290-D Reamwood Avenue Sunnyvale, CA 94089 (408) 744-9040		
Title: IO ROM		
Size: C	Document Number: MCPU-8	REV: E
Date: May 4, 1995	Sheet 8 of 9	

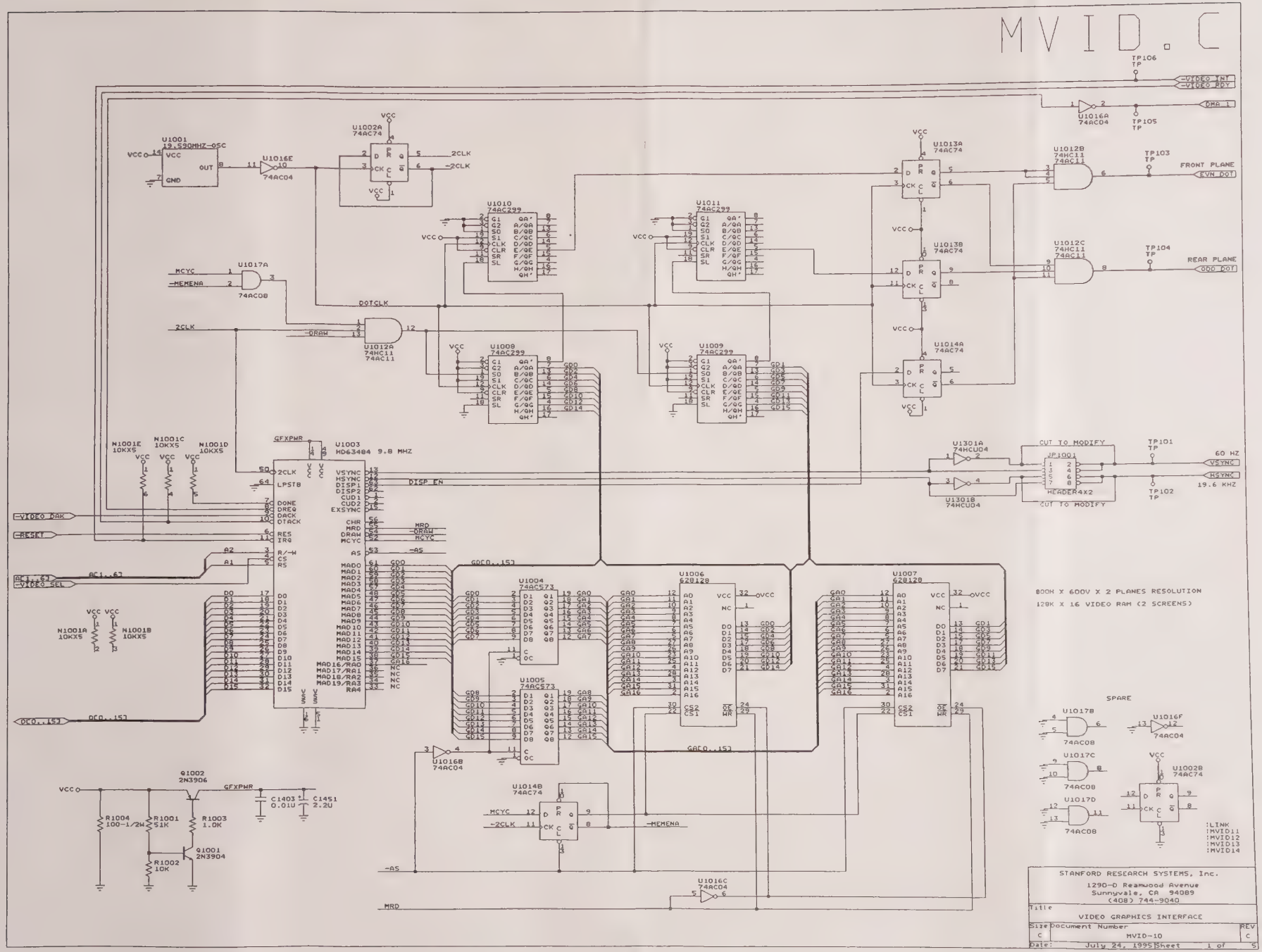




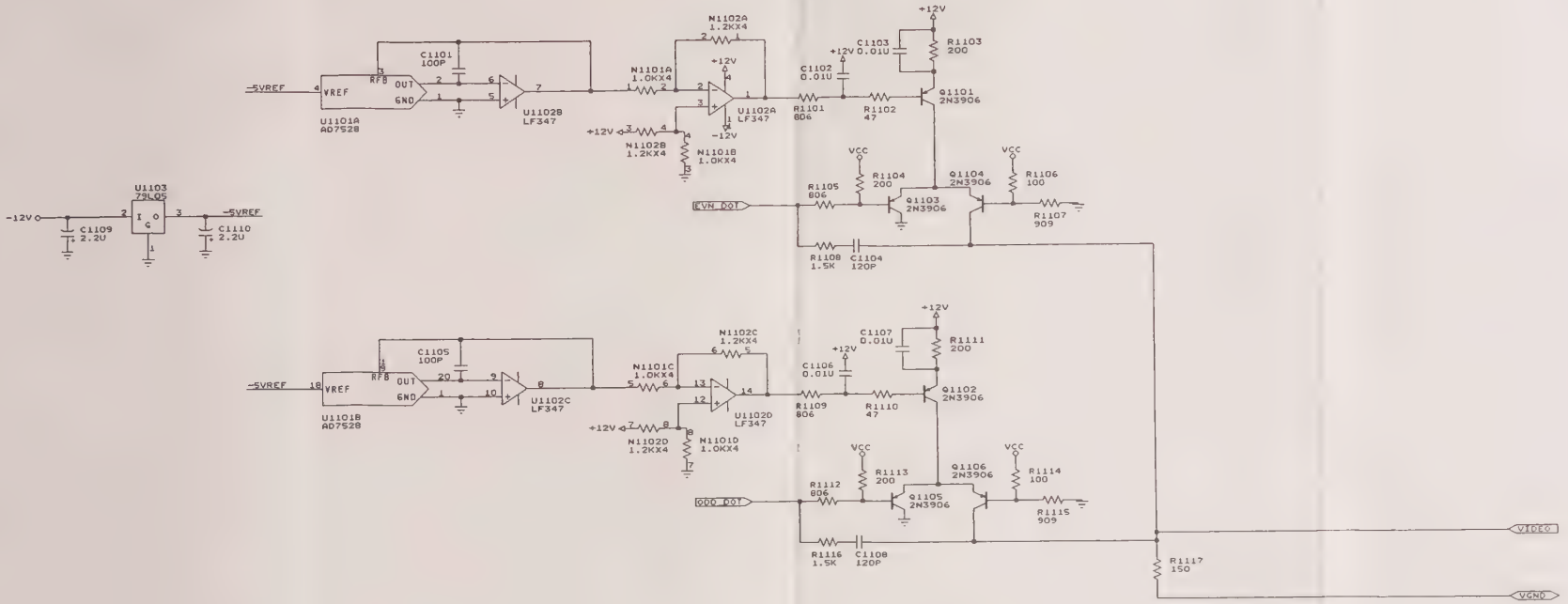
SPARE

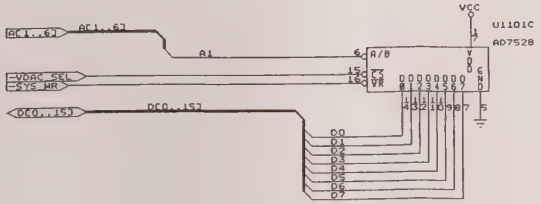


STANFORD RESEARCH SYSTEMS, Inc. 1290-D Reamwood Avenue Sunnyvale, CA 94089 (408) 744-9040		
Title: INTERFACE		
Size: C	Document Number: MCPU-9	REV: E
Date: October 21, 1994	Sheet 9 of 9	

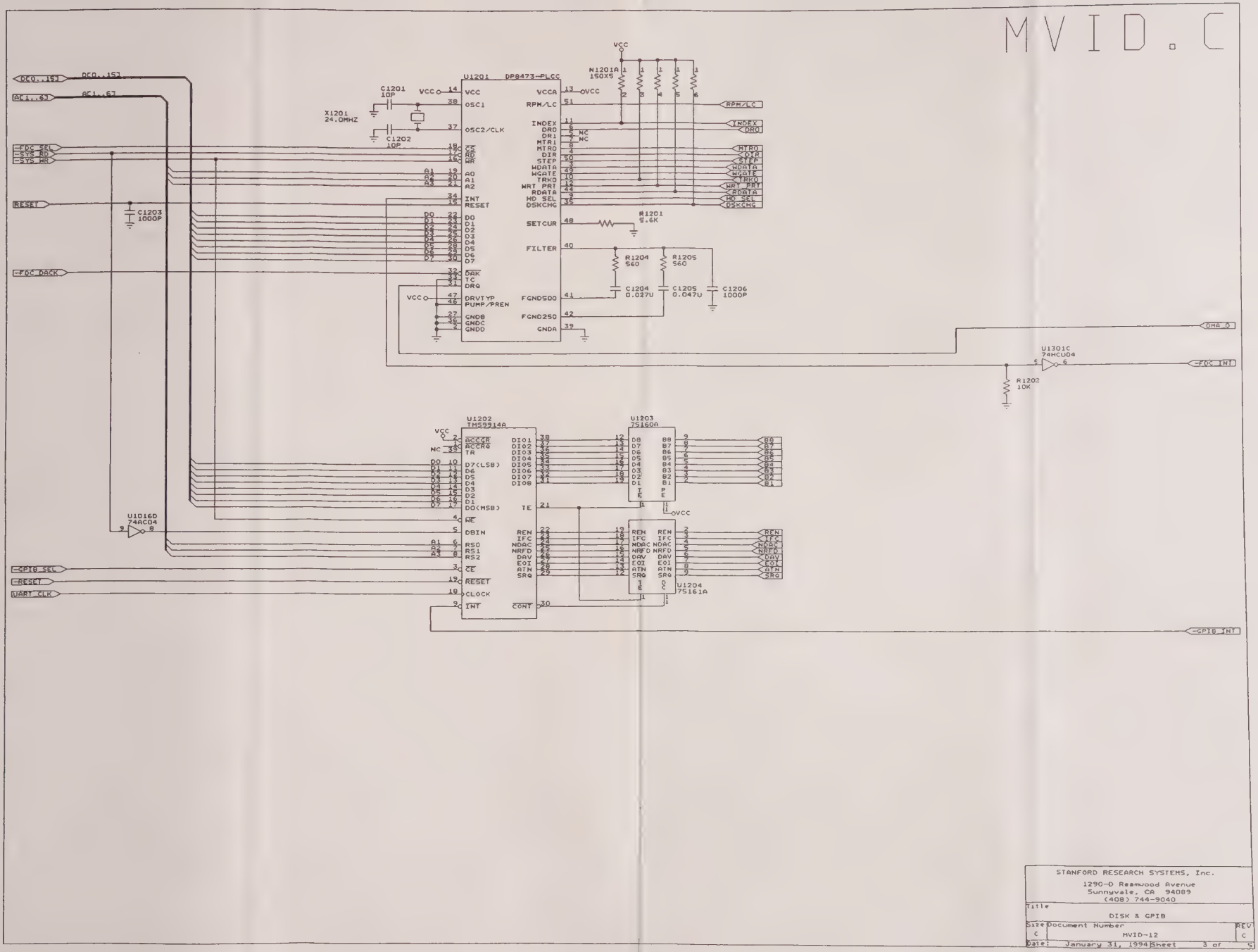

MVID.C
U1001
19.590MHZ-OSC
U1016E
74AC04
U1002A
74AC74
2CLK
-2CLK
U1010
74AC299
U1011
74AC299
U1013A
74AC74
U1013B
74AC74
U1014A
74AC74
U1012B
74HC11
74AC11
U1012C
74HC11
74AC11
U1012A
74HC11
74AC11
U1017A
74AC08
MCYC
-MEMENA
DOTCLK
-DRAW
U1008
74AC299
U1009
74AC299
TP106
TP
-VIDEO INT
-VIDEO RDY
U1016A
74AC04
TP105
TP
DMA 1
TP103
TP
FRONT PLANE
EVN DOT
TP104
TP
REAR PLANE
ODD DOT
U1003
MD63484 9.8 MHZ
GFXPWR
N1001E
10KX5
N1001C
10KX5
N1001D
10KX5
N1001A
10KX5
N1001B
10KX5
DISP EN
-VIDEO DAK
-RESET
-VIDEO SEL
AC1..6]
DC0..15]
MRD
-DRAW
MCYC
-AS
GDC0..15]
U1004
74AC573
U1005
74AC573
U1006
628128
U1007
628128
U1016B
74AC04
U1014B
74AC74
-2CLK
-MEMENA
U1016C
74AC04
U1301A
74HCU04
U1301B
74HCU04
CUT TO MODIFY
JP1001
HEADER4X2
CUT TO MODIFY
TP101
TP
60 HZ
VSYNC
HSYNC
19.6 KHZ
TP102
TP
800H X 600V X 2 PLANES RESOLUTION
128K X 16 VIDEO RAM (2 SCREENS)
SPARE
U1017B
74AC08
U1016F
74AC04
U1017C
74AC08
U1017D
74AC08
U1002B
74AC74
Q1002
2N3906
Q1001
2N3904
R1004
100-1/2W
R1001
51K
R1003
1.0K
R1002
10K
C1403
0.01U
C1451
2.2U
!LINK
!MVID11
!MVID12
!MVID13
!MVID14
STANFORD RESEARCH SYSTEMS, Inc.
1290-D Reamwood Avenue
Sunnyvale, CA 94089
(408) 744-9040
Title
VIDEO GRAPHICS INTERFACE
Size C
Document Number
MVID-10
REV C
Date: July 24, 1995
Sheet 1 of 5

MVID.C





STANFORD RESEARCH SYSTEMS, Inc.		
1290-D Reamwood Avenue Sunnyvale, CA 94089 (408) 744-9040		
Title: VIDEO DACS		
Size: C	Document Number: MVID-11	REV: C
Date: January 31, 1994	Sheet 2 of 5	

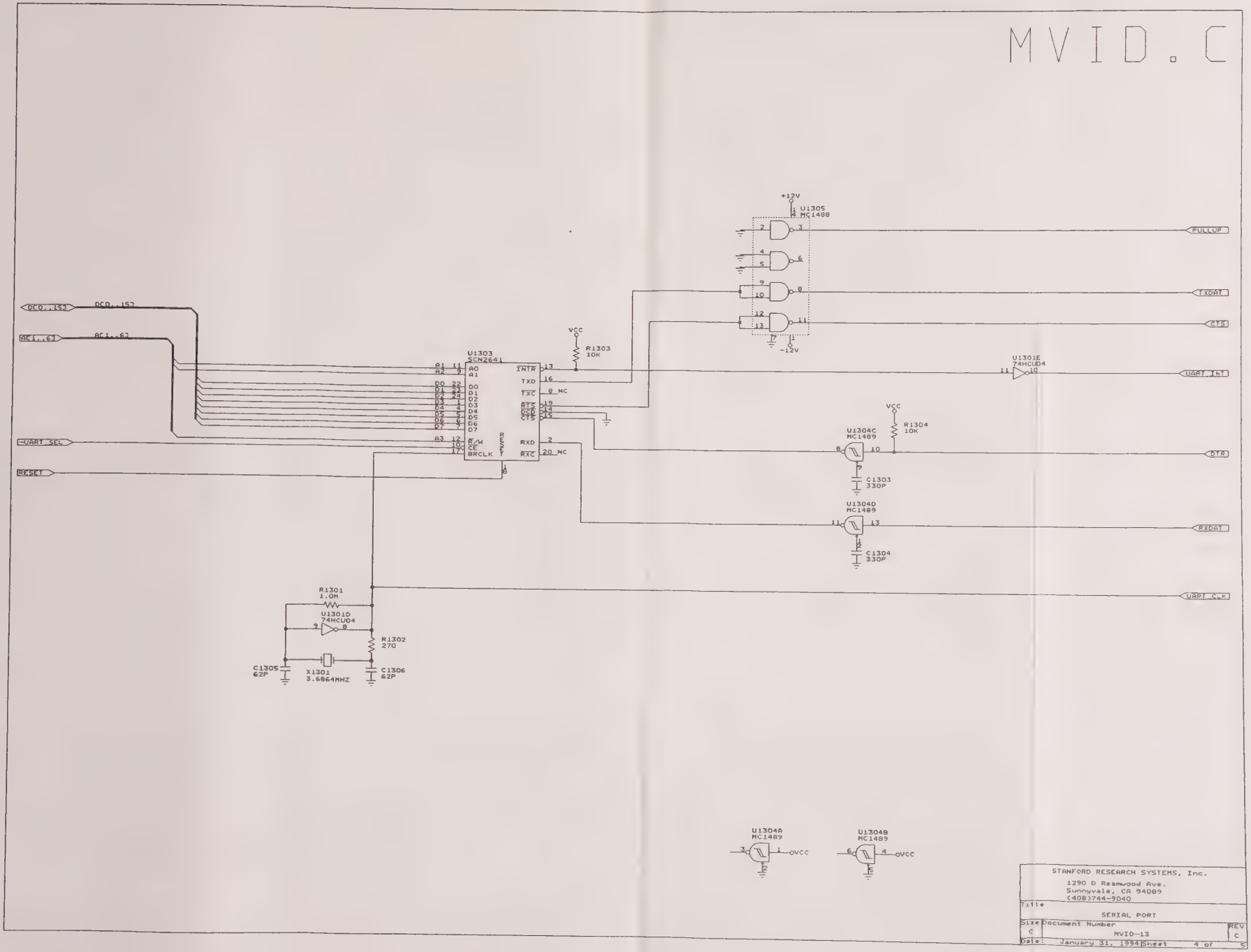


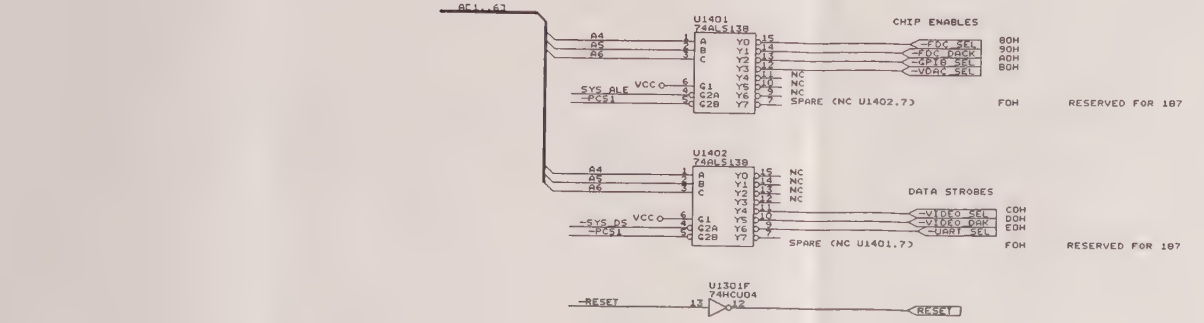
STANFORD RESEARCH SYSTEMS, Inc.
1290-D Reamwood Avenue
Sunnyvale, CA 94089
(408) 744-9040

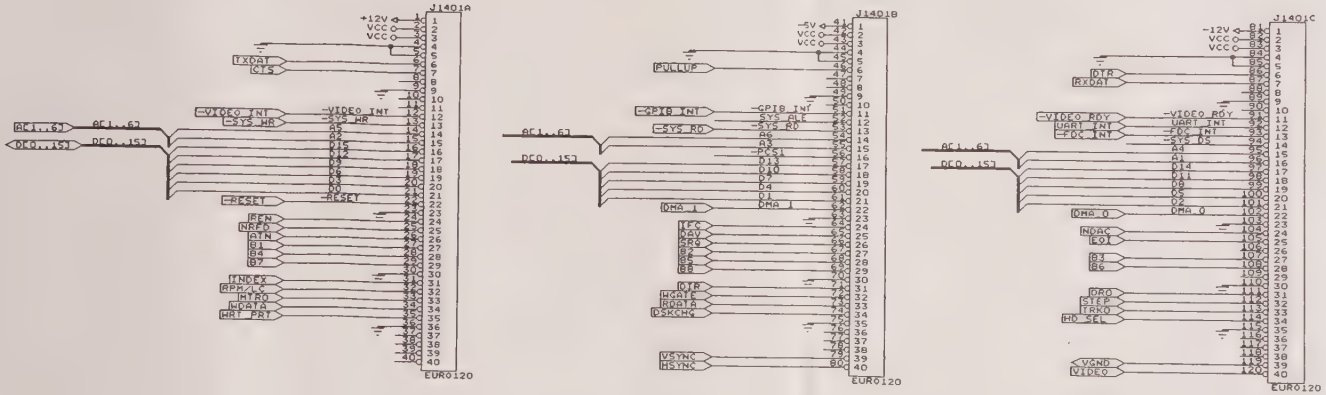
Title: DISK & GPIB

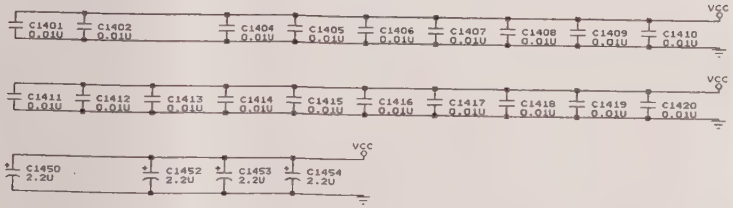
Size: C | Document Number: MVID-12 | REV: C

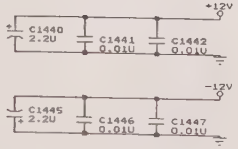
Date: January 31, 1994 | Sheet 3 of 5


DC0..15
AC1..6
-UART_SEL
RESET
U1303
SCN2641
R1303
10K
VCC
+12V
U1305
MC1488
-12V
PULLUP
TXDAT
CTS
U1301E
74HCU04
UART_INT
U1304C
MC1489
R1304
10K
C1303
330P
DTR
U1304D
MC1489
C1304
330P
RXDAT
UART_CK
R1301
1.0M
U1301D
74HCU04
R1302
270
C1305
62P
X1301
3.6864MHZ
C1306
62P
U1304A
MC1489
U1304B
MC1489
STANFORD RESEARCH SYSTEMS, Inc.
1290 D Reamwood Ave.
Sunnyvale, CA 94089
(408)744-9040
Title
SERIAL PORT
Size C
Document Number
MVID-13
REV C
Date: January 31, 1994
Sheet 4 of 5





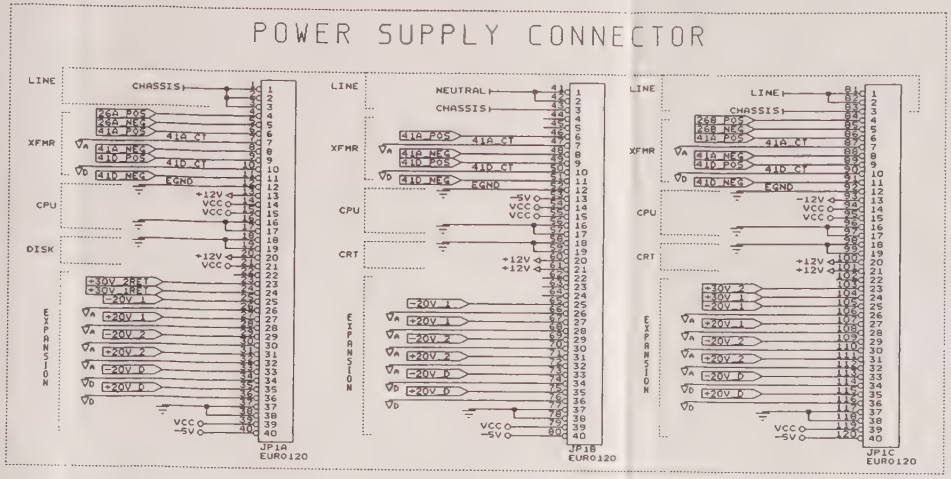




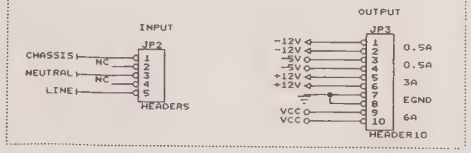
STANFORD RESEARCH SYSTEMS, Inc.	
1290 D Reamwood Ave.	
Sunnyvale, CA 94089	
(408)744-9040	
Title	I/O DECODE & INTERFACE
Size C	Document Number MVID-14 REV C
Date: March 3, 1994	Sheet 5 of 5

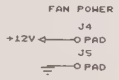
MPWR.D

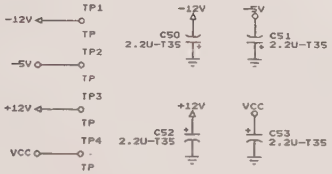
POWER SUPPLY CONNECTOR

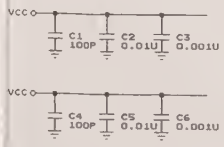


SWITCHING MODULE





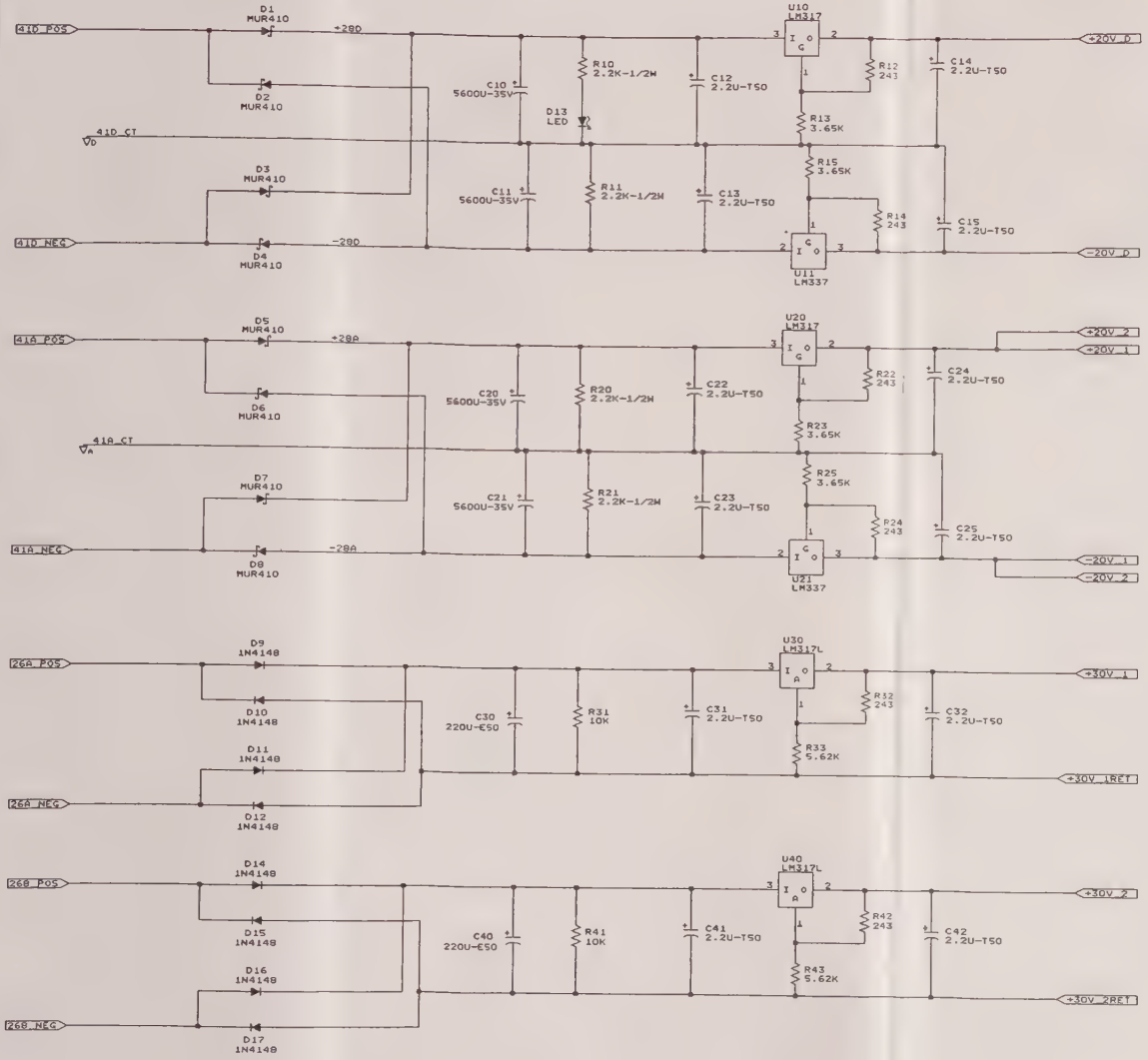




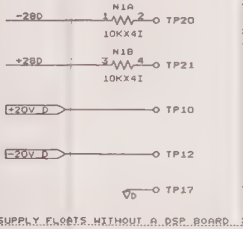
!LINK
!MPWR2

STANFORD RESEARCH SYSTEMS 1290 D Reamwood Ave. Sunnyvale, CA 94089 (408) 744-9040		
Title: SR780 POWER SUPPLY		
Size: C	Document Number: MPWR-1	REV: D
Date: November 3, 1994	Sheet 1 of 2	

MPWR.D

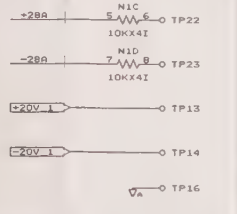


SOURCE POWER



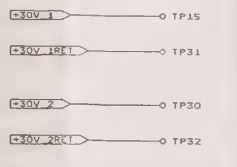
THIS SUPPLY FLOATS WITHOUT A DSP BOARD

ANALOG POWER



THIS SUPPLY FLOATS WITHOUT AN ANALOG BOARD

ICP POWER



THIS SUPPLY FLOATS WITHOUT AN ANALOG BOARD

STANFORD RESEARCH SYSTEMS
1290 D Reamwood Ave.
Sunnyvale, CA 94089
(408) 744-9040

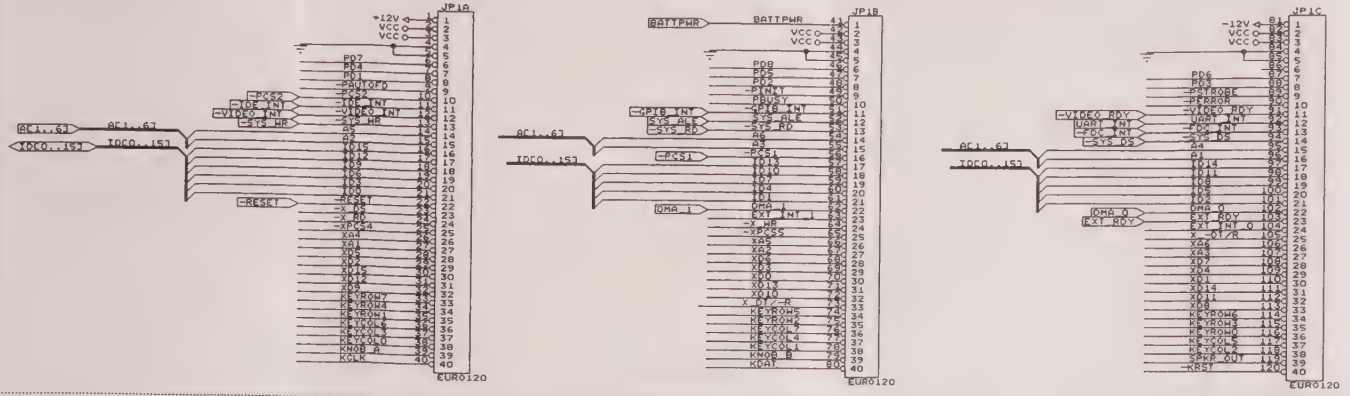
Title	SR780 POWER SUPPLY	
Size C	Document Number MPWR-2	REV D
Date: May 12, 1994	Sheet 2 of 2	

MBKPL.E

CPU SOCKET

120 PIN FEMALE
UPRIGHT CONNECTOR

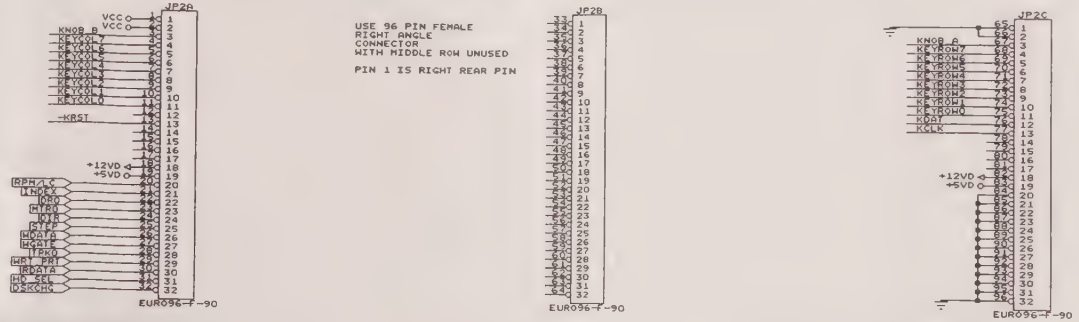
PIN 1 TOWARD REAR LEFT



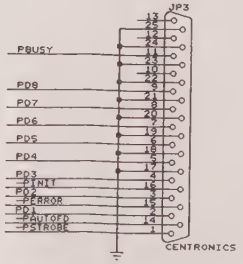
FRONT PANEL SOCKET

USE 96 PIN FEMALE
RIGHT ANGLE
CONNECTOR
WITH MIDDLE ROW UNUSED

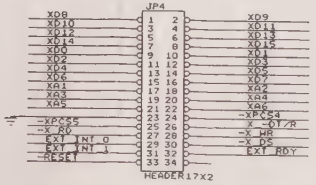
PIN 1 IS RIGHT REAR PIN



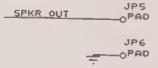
PRINTER



DSP CONNECTOR



SPEAKER



:LINK
:MMOM21
:MMOM22
:MMOM23

STANFORD RESEARCH SYSTEMS, Inc.
1290-D Reamwood Avenue
Sunnyvale, CA 94089
(408) 744-9040

Title: CPU SOCKET

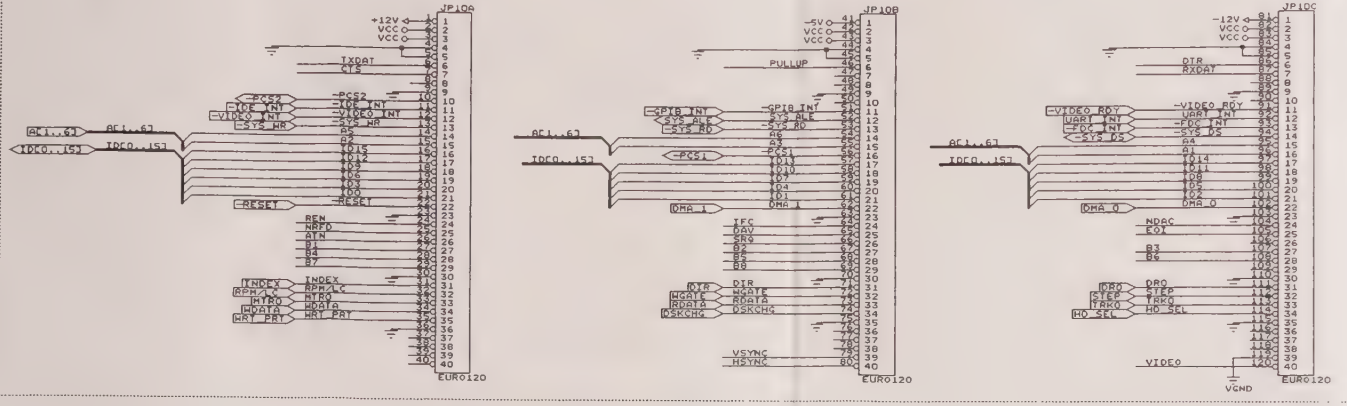
Size: Document Number: MBKPL-20 REV: E

Date: May 12, 1994 Sheet 1 of 4

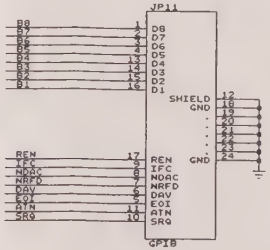
VIDEO/IO SOCKET

120 PIN FEMALE
UPRIGHT CONNECTOR

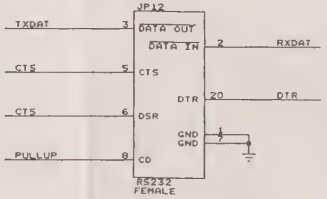
PIN 1 AT REAR LEFT



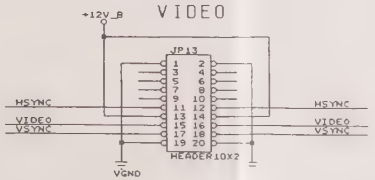
GPIB



RS232



VIDEO



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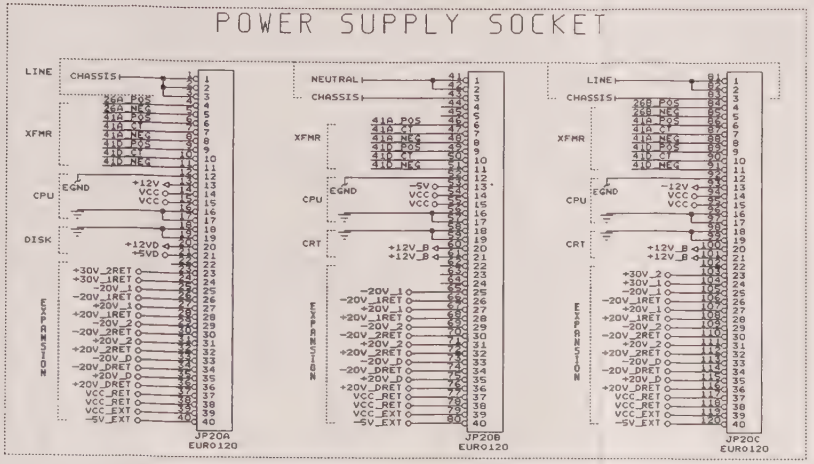
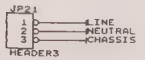
1290 D Reamwood Ave.	
Sunnyvale, CA 94089	
(408)744-9040	
Title	VIDEO/INTERFACE SOCKET
Size	Document Number MBKPL-21 REV E
Date: May 12, 1994	Sheet 2 of 4

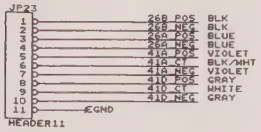
MBKPL.E



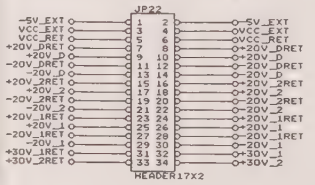
SWITCHED AC LINE CONNECTOR



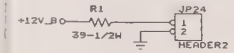
TRANSFORMER CONNECTOR



EXPANSION POWER



CARD CAGE FAN



STANFORD RESEARCH SYSTEMS
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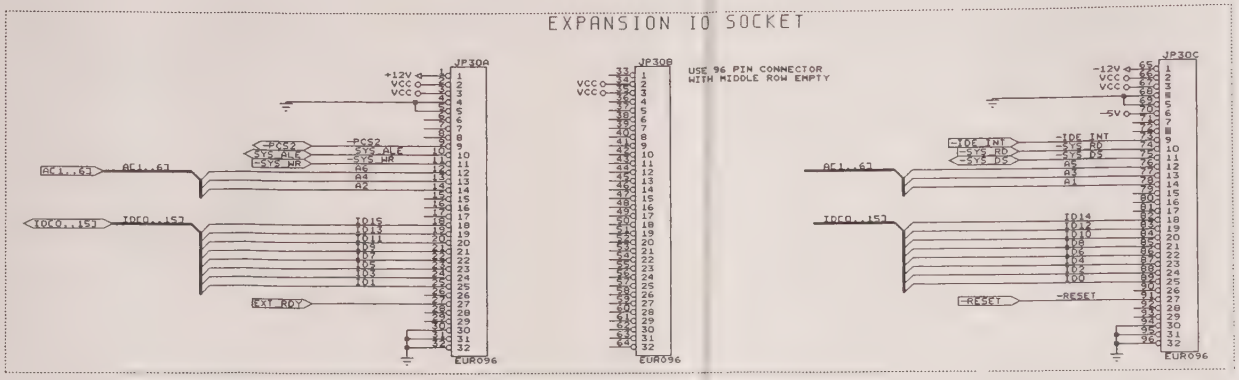
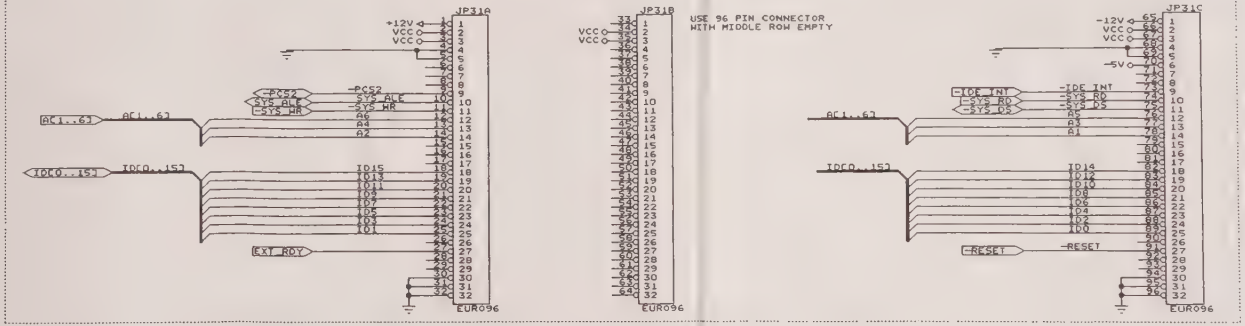
(408) 744-9040

Title	POWER SUPPLY SOCKET	
Size:	Document Number: MBKPL-22	REV: E
Date: November 2, 1994	Sheet 3 of 4	

EXPANSION IO SOCKET



EXPANSION IO SOCKET



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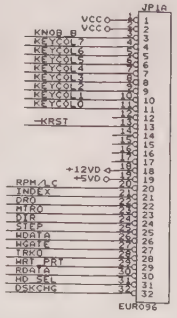
(408)744-9040		
Title: IO SOCKET		
Size: C	Document Number: MBKPL-23	REV: E
Date: May 12, 1994	Sheet 4 of 4	

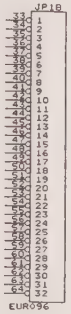
MBKPL.C

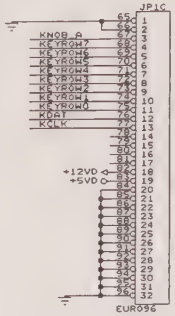
FRONT PANEL SOCKET



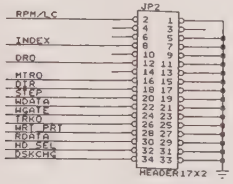
USE 96 PIN MALE
RIGHT ANGLE
CONNECTOR
WITH MIDDLE ROW UNUSED

PIN 1 IS RIGHT FRONT PIN



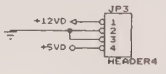


DISK DATA



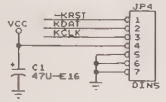
PIN 1 TO RIGHT

DISK POWER

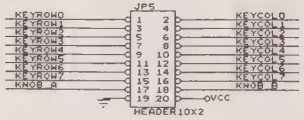


PIN 1 TO RIGHT

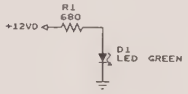
KEYBD



KEYPAD



POWER LED



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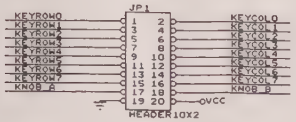
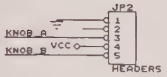
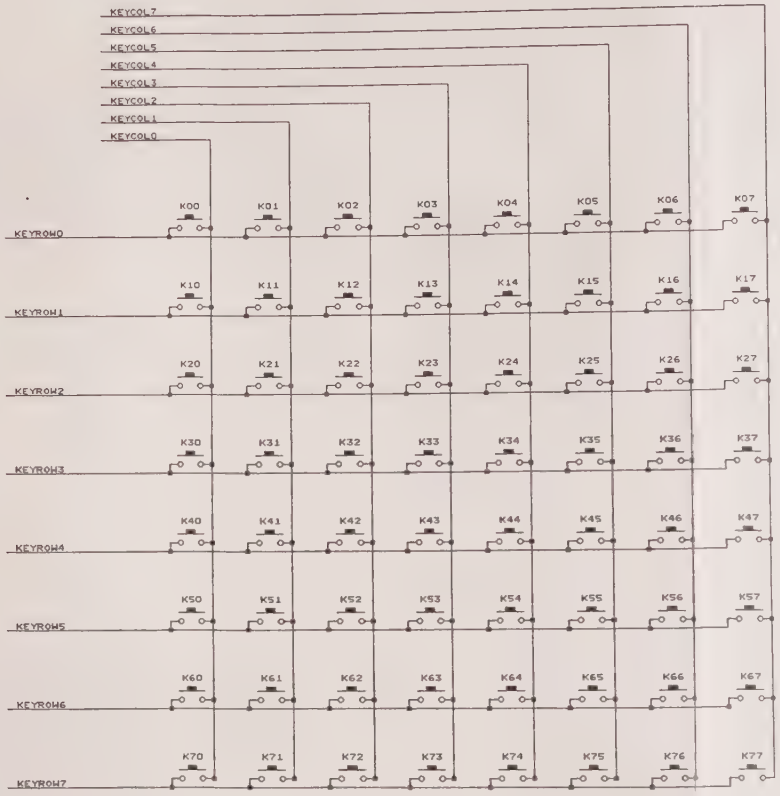
Title	DISK DRIVE CARD	
Size C	Document Number MBKPL-24	REV C
Date: October 6, 1994	Sheet 1 of 1	

MKEY.B







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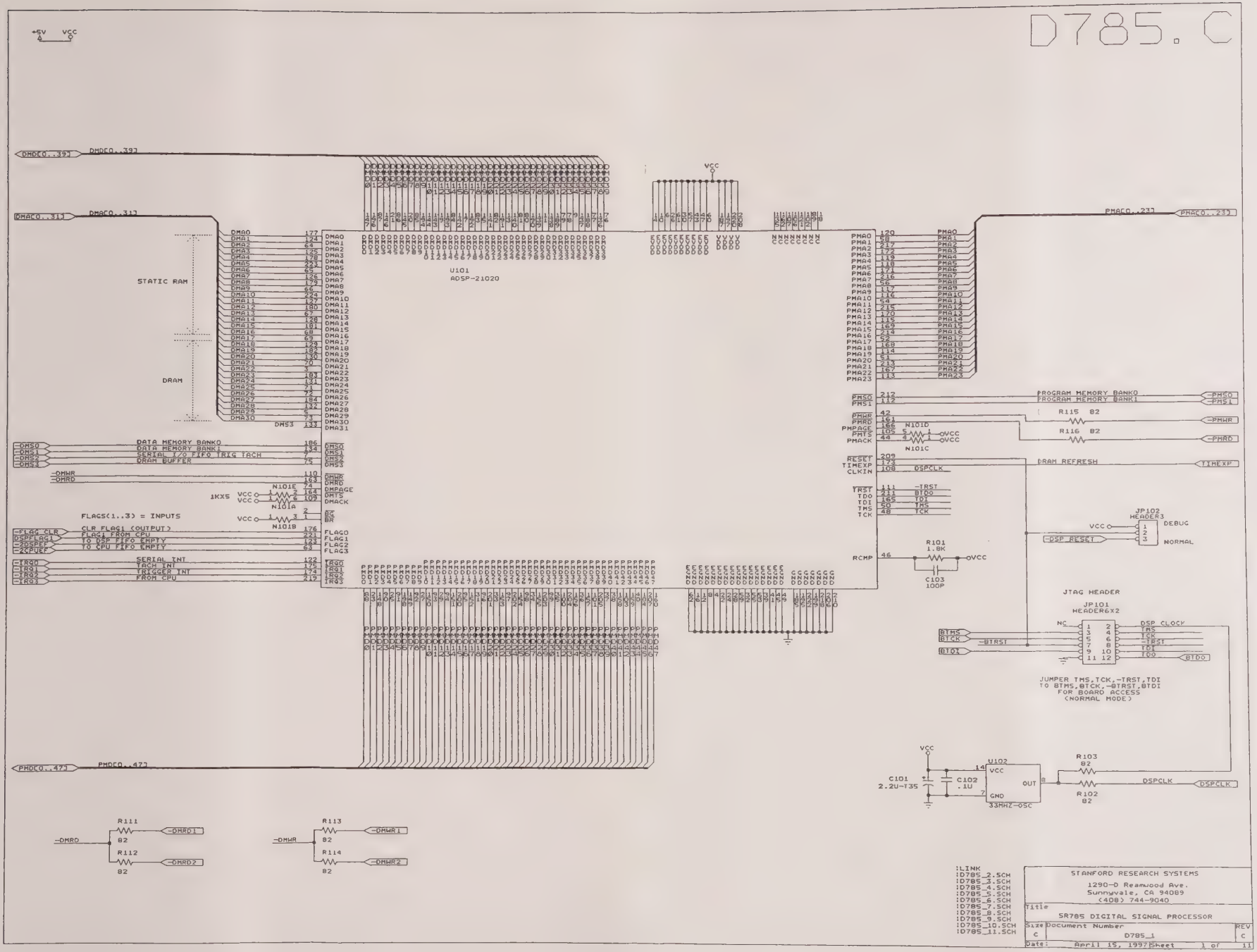
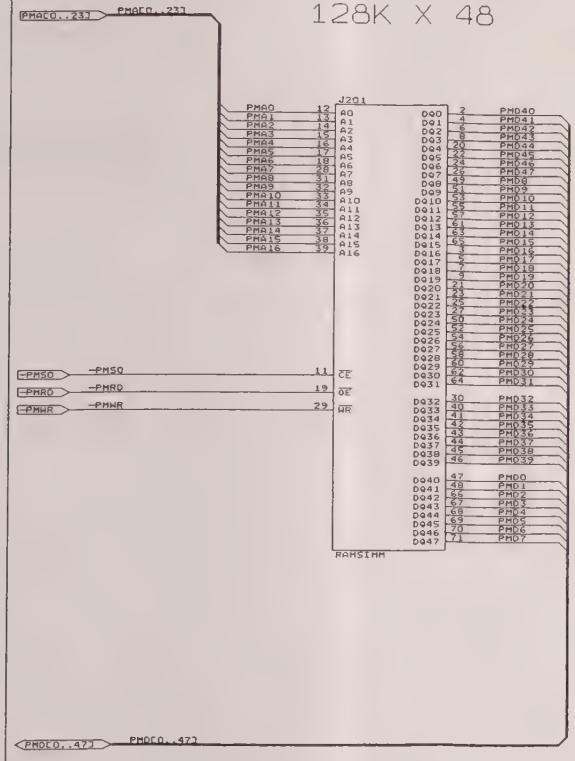
Title	MEGA KEYBOARD	
Size: C	Document Number: MKEY1	REV: B
Date: November 3, 1994	Sheet 1 of 1	

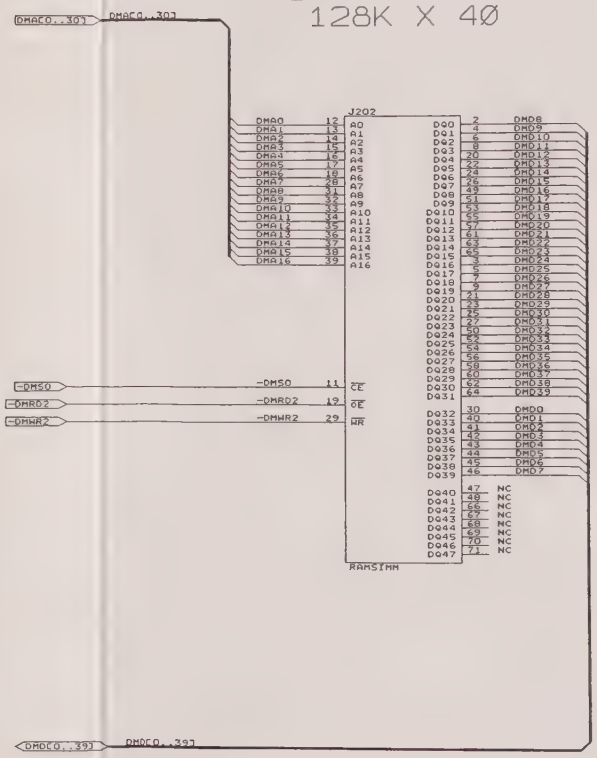

D785.C
+5V VCC
DMD[0..39]
DMA[0..31]
STATIC RAM
DRAM
U101
ADSP-21020
PMA[0..23]
PMD[0..47]
DATA MEMORY BANK0
DATA MEMORY BANK1
SERIAL I/O FIFO IRIG TACH
DRAM BUFFER
FLAGS(1..3) = INPUTS
CLR FLAG1 (OUTPUT)
FLAG1 FROM CPU
TO DSP FIFO EMPTY
TO CPU FIFO EMPTY
SERIAL INT
TACH INT
TRIGGER INT
FROM CPU
PROGRAM MEMORY BANK0
PROGRAM MEMORY BANK1
DRAM REFRESH
DEBUG
NORMAL
JTAG HEADER
JUMPER TMS,TCK,-TRST,TDI TO BTMS,BTCK,-BTRST,BTDI FOR BOARD ACCESS (NORMAL MODE)
33MHZ-OSC
DSPCLK
STANFORD RESEARCH SYSTEMS
1290-D Reamwood Ave.
Sunnyvale, CA 94089
(408) 744-9040
SR785 DIGITAL SIGNAL PROCESSOR
D785_1
April 15, 1997
1 of 11

+5V VCC

PROGRAM MEMORY 1
128K X 48



DATA MEMORY 1
128K X 40



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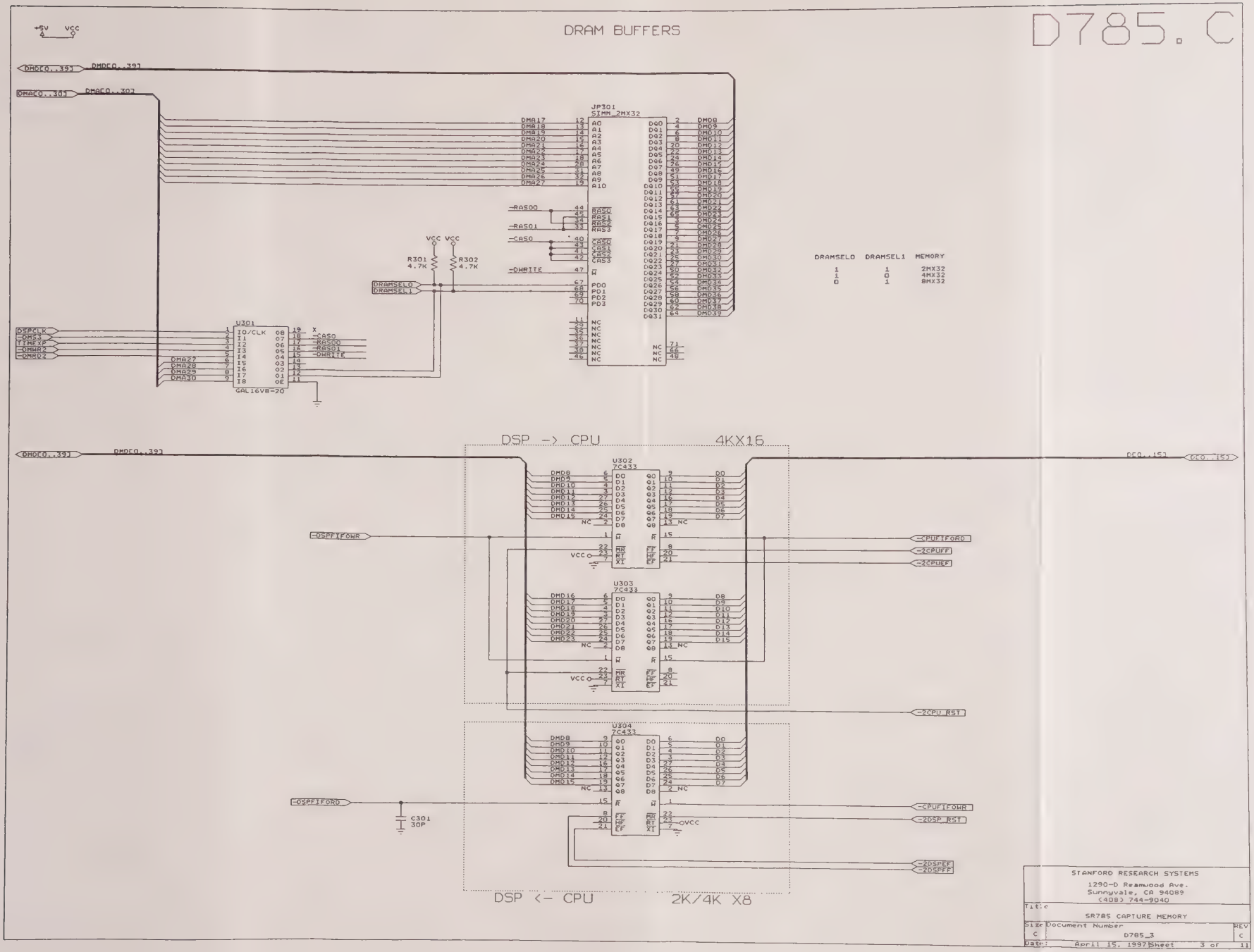
Title: SR785 FAST MEMORY 1

Size	Document Number	REV
C	D785_2	C

Date: April 15, 1997 Sheet 2 of 11


DRAM BUFFERS
D785.C
+5V
VCC
DMD[0..39]
DMA[0..30]
JP301
SIMM_2MX32
DMA17
DMA18
DMA19
DMA20
DMA21
DMA22
DMA23
DMA24
DMA25
DMA26
DMA27
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
DQ0
DQ1
DQ2
DQ3
DQ4
DQ5
DQ6
DQ7
DQ8
DQ9
DQ10
DQ11
DQ12
DQ13
DQ14
DQ15
DQ16
DQ17
DQ18
DQ19
DQ20
DQ21
DQ22
DQ23
DQ24
DQ25
DQ26
DQ27
DQ28
DQ29
DQ30
DQ31
DMD0
DMD1
DMD2
DMD3
DMD4
DMD5
DMD6
DMD7
DMD8
DMD9
DMD10
DMD11
DMD12
DMD13
DMD14
DMD15
DMD16
DMD17
DMD18
DMD19
DMD20
DMD21
DMD22
DMD23
DMD24
DMD25
DMD26
DMD27
DMD28
DMD29
DMD30
DMD31
DMD32
DMD33
DMD34
DMD35
DMD36
DMD37
DMD38
DMD39
-RAS00
-RAS01
-CAS0
-DWRITE
RAS0
RAS1
RAS2
RAS3
CAS0
CAS1
CAS2
CAS3
R301
4.7K
R302
4.7K
DRAMSEL0
DRAMSEL1
PD0
PD1
PD2
PD3
NC
DRAMSEL0 DRAMSEL1 MEMORY
1 1 2MX32
1 0 4MX32
0 1 8MX32
U301
GAL16V8-20
IO/CLK
I1
I2
I3
I4
I5
I6
I7
I8
OE
O8
O7
O6
O5
O4
O3
O2
O1
DSPCLK
-DMS3
TIMEXP
-DMWR2
-DMRD2
DMA27
DMA28
DMA29
DMA30
-CAS0
-RAS00
-RAS01
-DWRITE
DSP -> CPU 4KX16
DMD[0..39]
DD[0..15]
U302
7C433
U303
7C433
U304
7C433
-DSPFIFOWR
-CPUFIFORD
-2CPUFF
-2CPUEF
-2CPU_RST
-DSPFIFORD
-CPUFIFOWR
-2DSP_RST
-2DSPEF
-2DSPFF
C301
30P
VCC
DSP <- CPU 2K/4K X8
STANFORD RESEARCH SYSTEMS
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Sunnyvale, CA 94089
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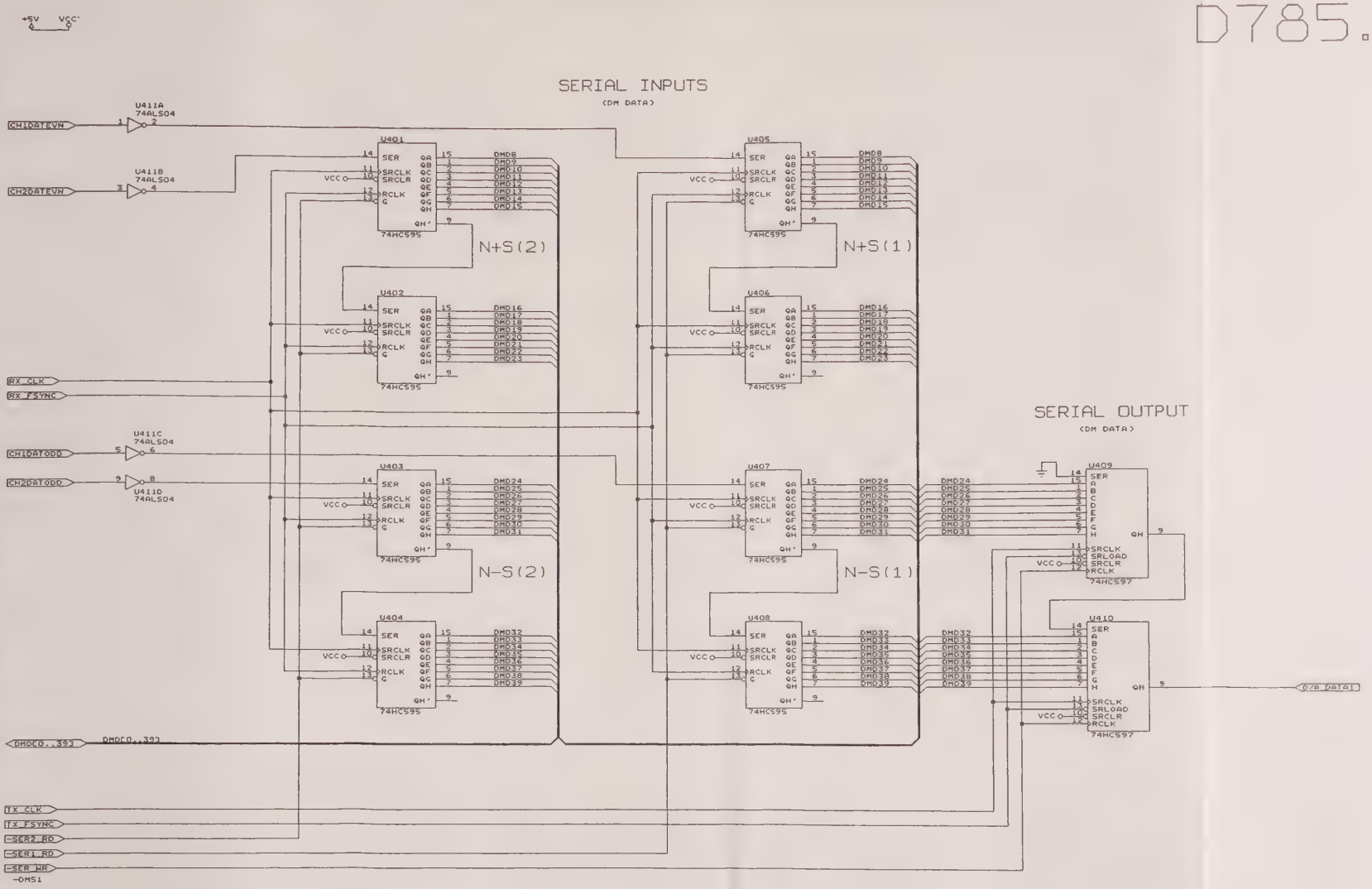
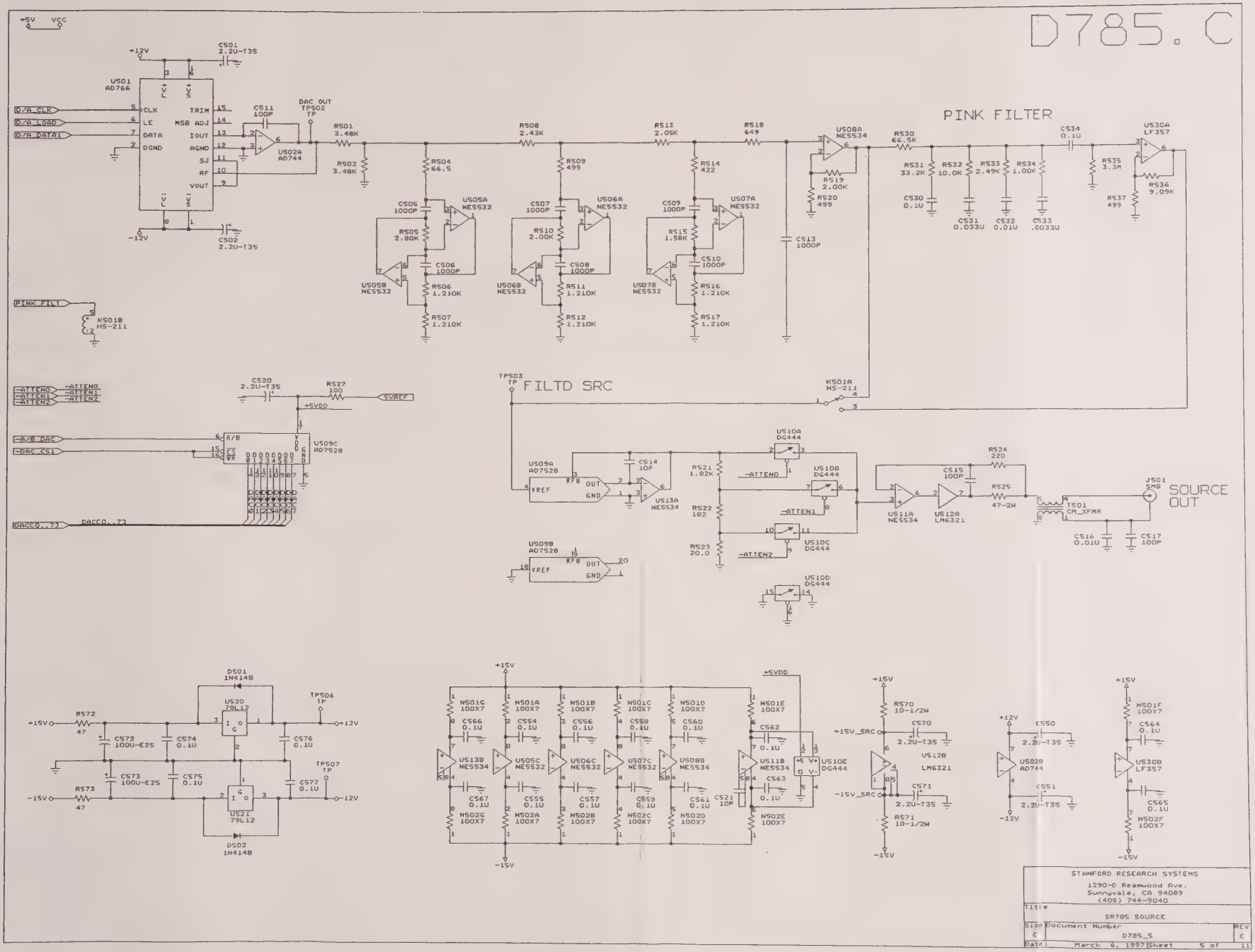
Title
SR785 CAPTURE MEMORY
Size C
Document Number D785_3
REV C
Date: April 15, 1997 Sheet 3 of 11

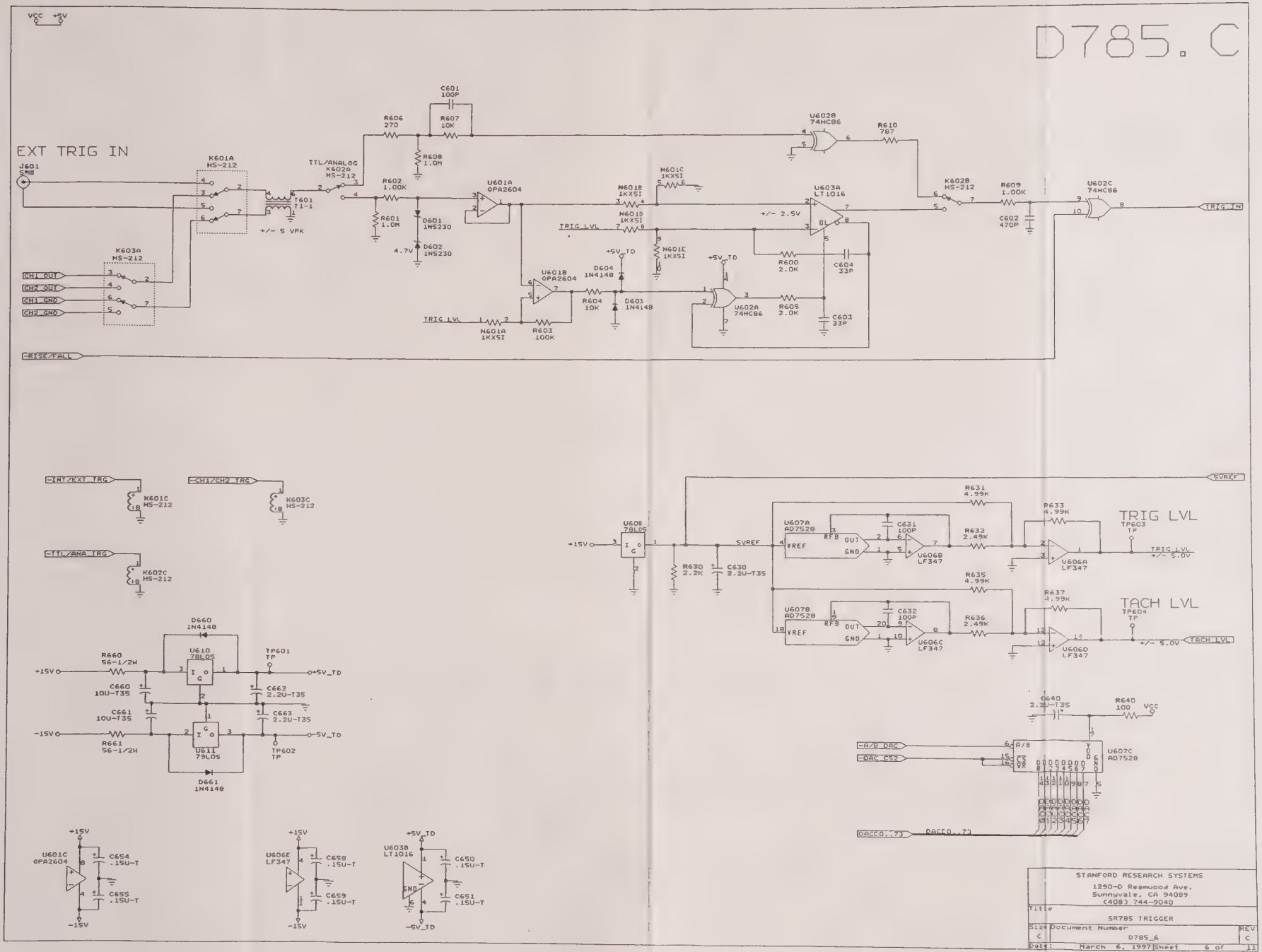
D785.C



STANFORD RESEARCH SYSTEMS		
1290-D Reamwood Ave. Sunnyvale, CA 94089 (408) 744-9040		
Title: SR785 DATA SERIALIZERS		
Size: C	Document Number: D785_4	REV: C
Date: March 6, 1997	Sheet 4 of 11	


D785.C
PINK FILTER
FILTD SRC
SOURCE OUT
U501 AD766
U502A AD744
U508A NE5534
U530A LF357
U509C AD7528
U509A AD7528
U509B AD7528
U510A DG444
U510B DG444
U510C DG444
U510D DG444
U511A NE5534
U512A LM6321
U513A NE5534
U513B NE5534
U505A NE5532
U505B NE5532
U506A NE5532
U506B NE5532
U507A NE5532
U507B NE5532
U508B NE5534
U511B NE5534
U510E DG444
U512B LM6321
U502B AD744
U530B LF357
U520 78L12
U521 79L12
D501 1N4148
D502 1N4148
K501B HS-211
K501A HS-211
J501 SMB
T501 CM_XFMR
TP503 TP
TP506 TP
TP507 TP
TP502 TP
DAC OUT
D/A CLK
D/A LOAD
D/A DATA1
PINK FILT
-ATTEN0
-ATTEN1
-ATTEN2
-A/B DAC
-DAC CS1
DAC[0..7]
SVREF
+5V
VCC
+12V
-12V
+15V
-15V
+15V_SRC
-15V_SRC
+5VDD
STANFORD RESEARCH SYSTEMS
1290-D Reamwood Ave.
Sunnyvale, CA 94089
(408) 744-9040
Title
SR785 SOURCE
Size C
Document Number D785_S
REV C
Date: March 6, 1997
Sheet 5 of 11

D785.C


EXT TRIG IN
J601
K601A HS-212
TTL/ANALOG K602A HS-212
T601 T1-1
+/- 5 VPK
K603A HS-212
CH1 OUT
CH2 OUT
CH1 GND
CH2 GND
R606 270
C601 100P
R607 10K
R608 1.0M
R602 1.00K
R601 1.0M
D601 1N5230
D602 1N5230
4.7V
U601A OPA2604
U602B 74HC86
R610 787
N601C 1KX5I
N601B 1KX5I
N601D 1KX5I
N601E 1KX5I
U603A LT1016
+/- 2.5V
K602B HS-212
R609 1.00K
C602 470P
U602C 74HC86
TRIG IN
TRIG LVL
+5V_TD
D604 1N4148
D603 1N4148
U601B OPA2604
R604 10K
R603 100K
N601A 1KX5I
U602A 74HC86
R600 2.0K
R605 2.0K
C604 33P
C603 33P
-RISE/FALL
-INT/EXT TRG
-CH1/CH2 TRG
-TTL/ANA TRG
K601C HS-212
K603C HS-212
K602C HS-212
D660 1N4148
U610 78L05
TP601 TP
R660 56-1/2W
C660 10U-T35
C661 10U-T35
C662 2.2U-T35
C663 2.2U-T35
R661 56-1/2W
U611 79L05
TP602 TP
D661 1N4148
+15V
-15V
+5V_TD
-5V_TD
U601C OPA2604
C654 .15U-T
C655 .15U-T
U606E LF347
C658 .15U-T
C659 .15U-T
U603B LT1016
C650 .15U-T
C651 .15U-T
U608 78L05
R630 2.2K
C630 2.2U-T35
SVREF
U607A AD7528
U607B AD7528
R631 4.99K
R632 2.49K
C631 100P
R633 4.99K
U606A LF347
TRIG LVL
TP603 TP
+/- 5.0V
R635 4.99K
R636 2.49K
C632 100P
R637 4.99K
U606C LF347
U606D LF347
TACH LVL
TP604 TP
C640 2.2U-T35
R640 100
VCC
-A/B DAC
-DAC CS2
U607C AD7528
DACD0..7
STANFORD RESEARCH SYSTEMS
1290-D Reamwood Ave.
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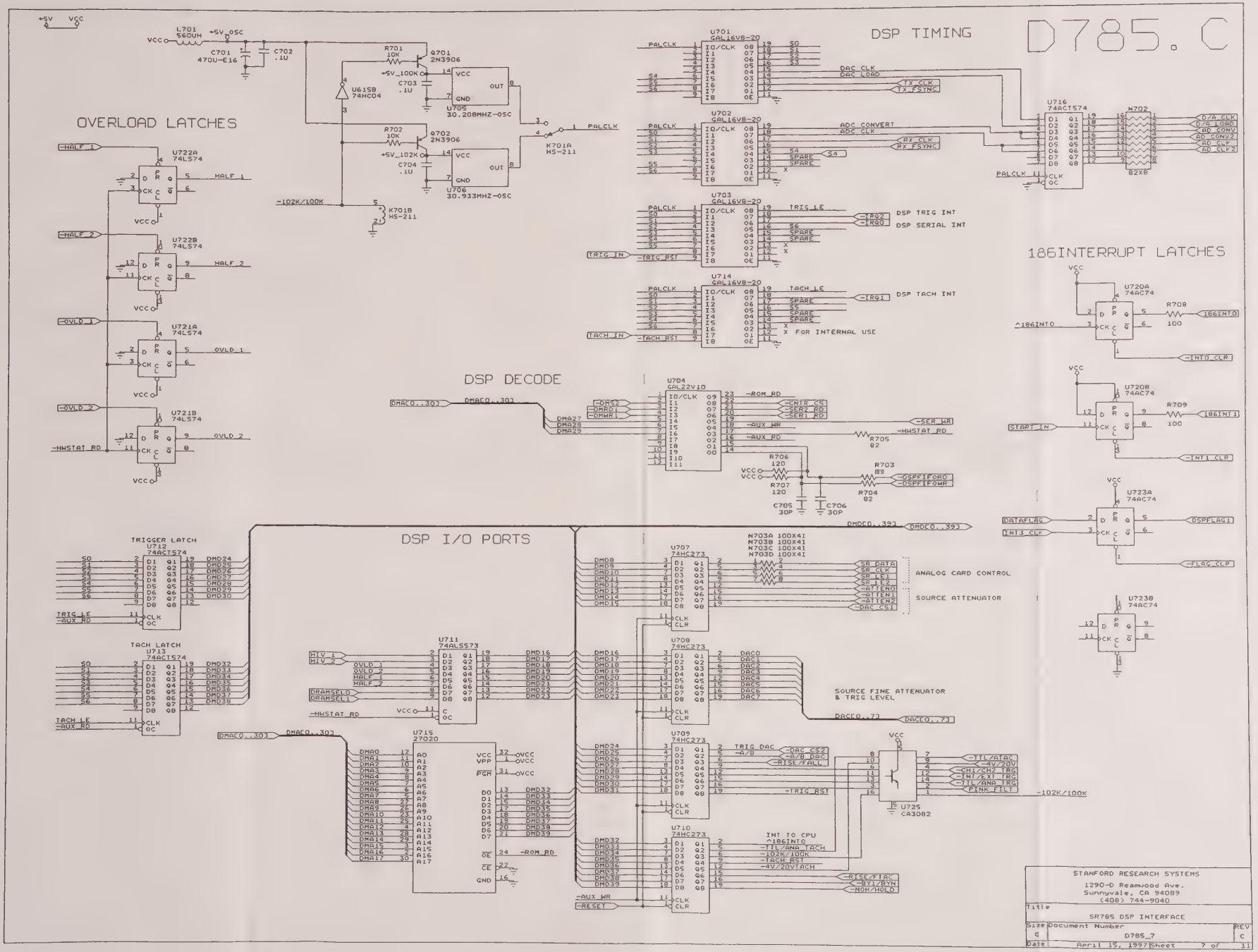
Title
SR785 TRIGGER
Size C
Document Number D785_6
REV C
Date: March 6, 1997 Sheet 6 of 11


D785.C
DSP TIMING
OVERLOAD LATCHES
DSP DECODE
186INTERRUPT LATCHES
DSP I/O PORTS
TRIGGER LATCH
TACH LATCH
ANALOG CARD CONTROL
SOURCE ATTENUATOR
SOURCE FINE ATTENUATOR & TRIG LEVEL
INT TO CPU
DSP TRIG INT
DSP SERIAL INT
DSP TACH INT
FOR INTERNAL USE
STANFORD RESEARCH SYSTEMS
1290-D Reamwood Ave.
Sunnyvale, CA 94089
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SR785 DSP INTERFACE
D785_7
April 15, 1997
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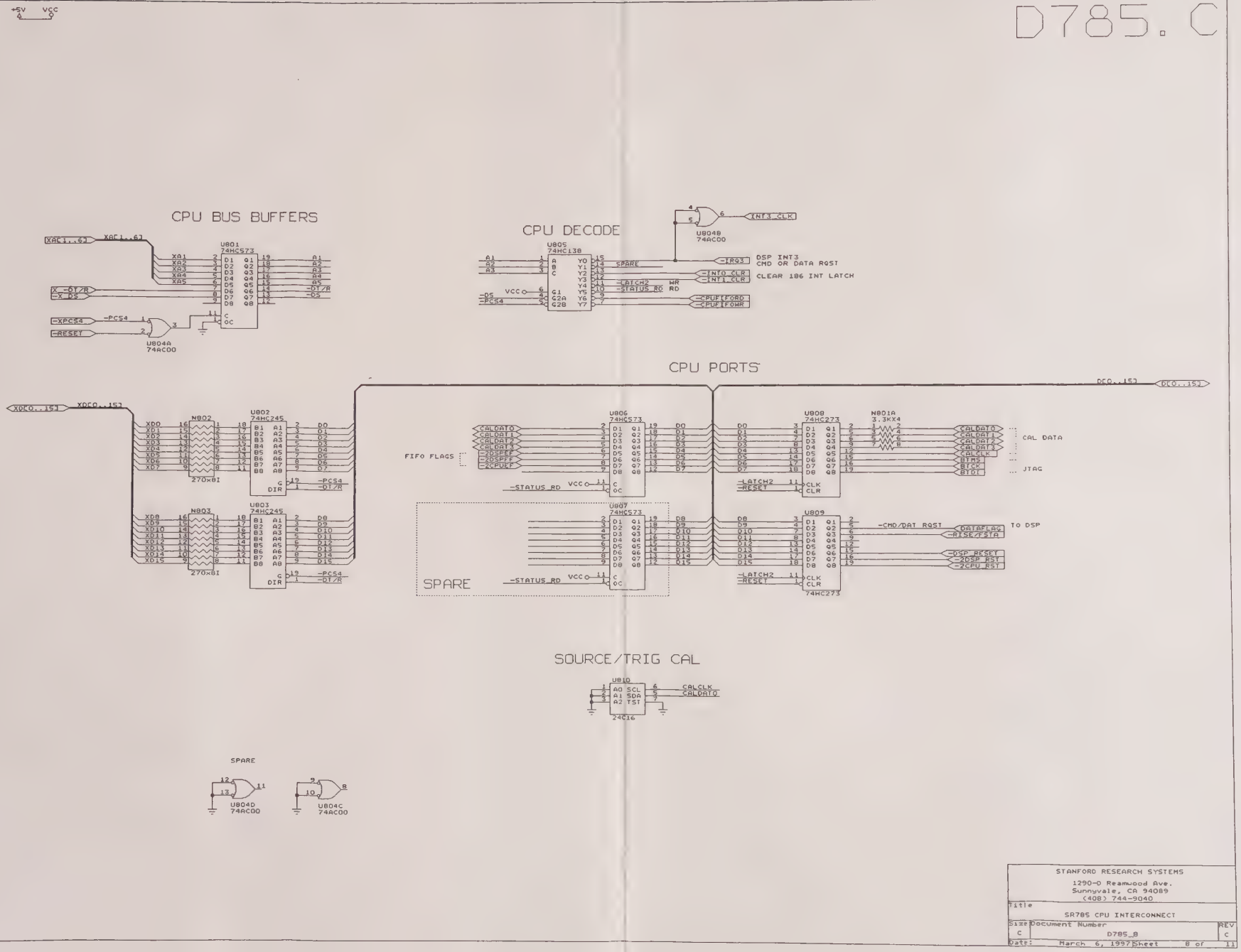
D785.C



STANFORD RESEARCH SYSTEMS		
1290-D Reamwood Ave.		
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Title	SR785 CPU INTERCONNECT	
Size C	Document Number D785_8	REV C
Date: March 6, 1997	Sheet 8 of 11	

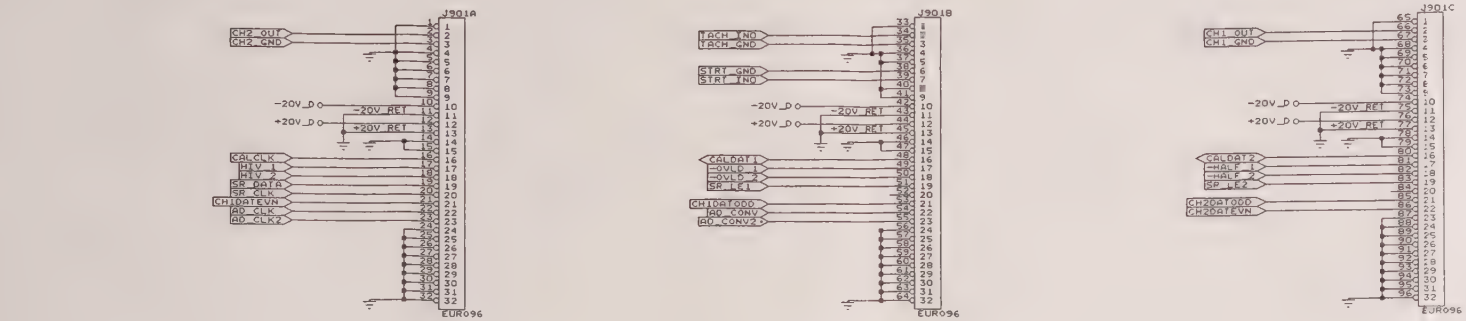
D785.C

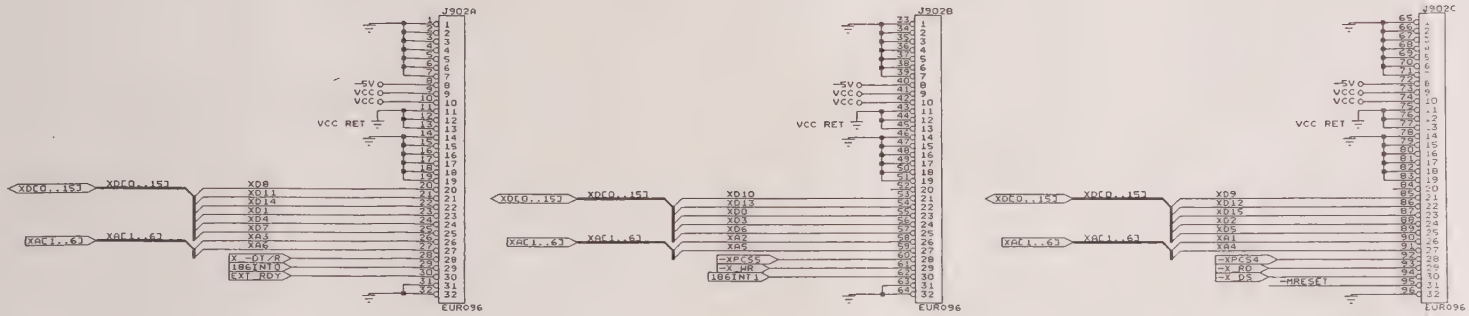
FRONT

TOP

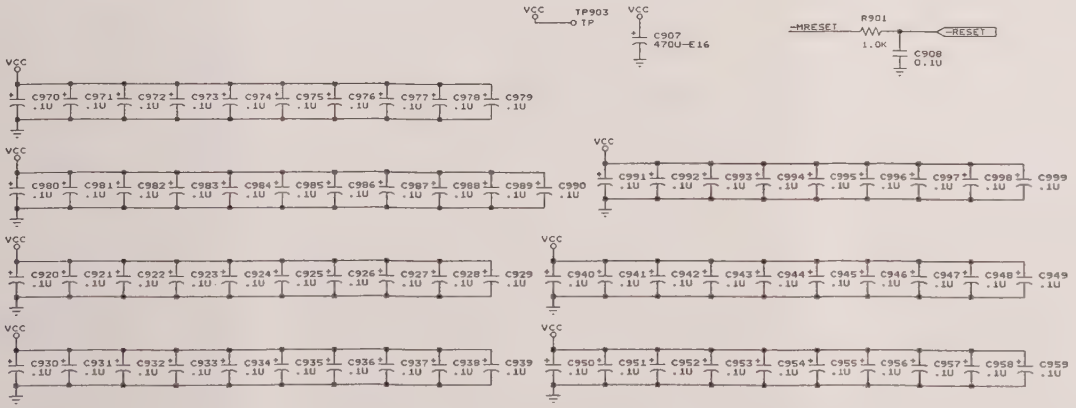
MIDDLE

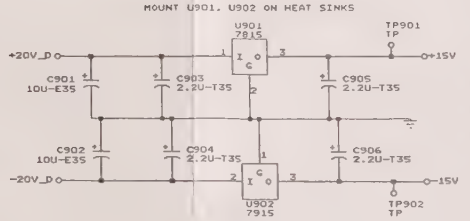
BOTTOM



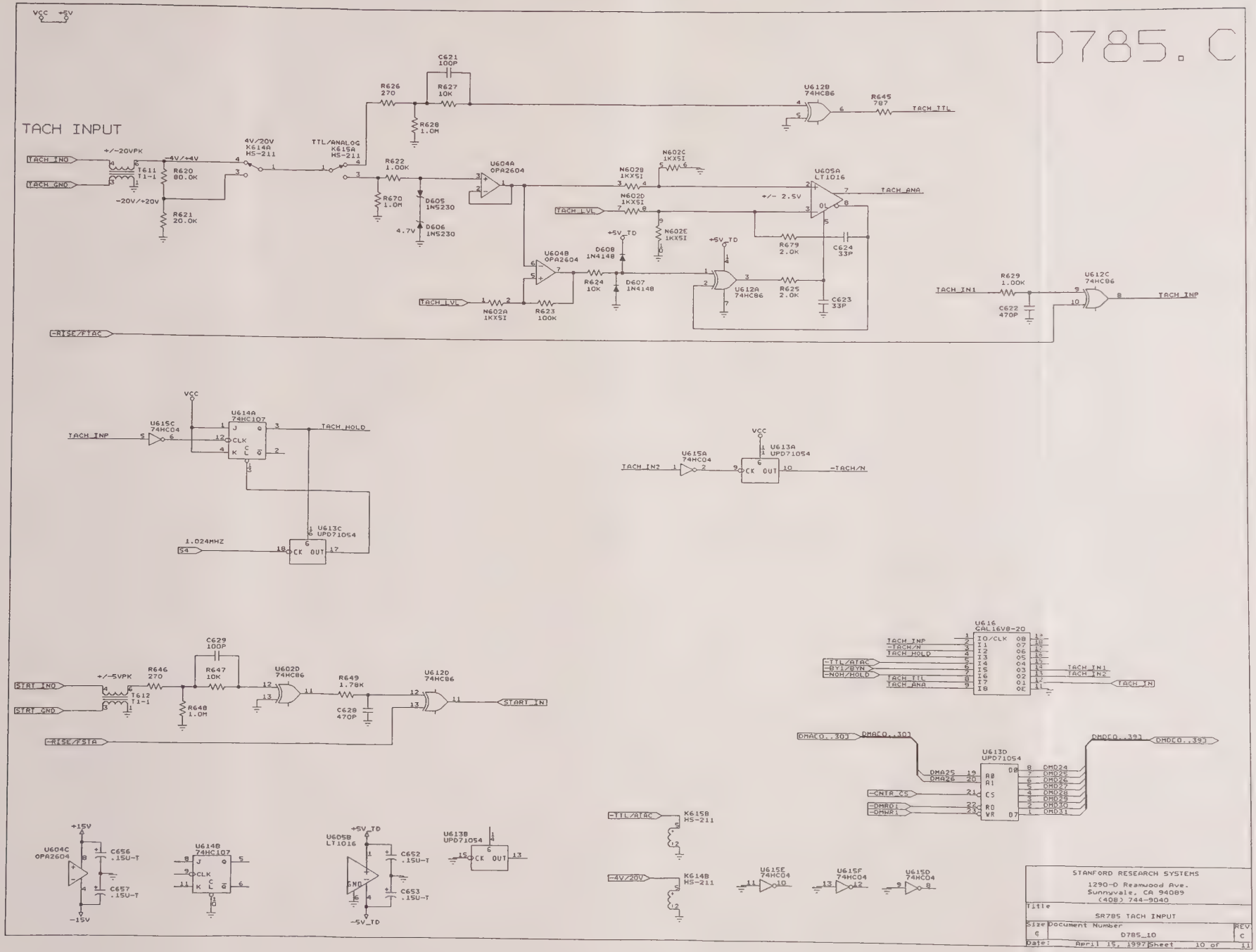


REAR



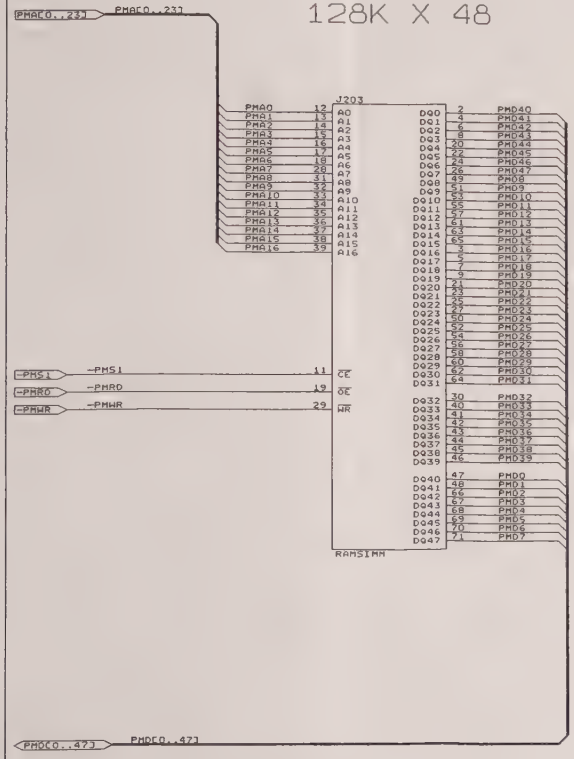


STANFORD RESEARCH SYSTEMS 1290-D Reamwood Ave. Sunnyvale, CA 94089 (408) 744-9040		
Title: SR785 SYSTEM INTERCONNECT		
Size: Q	Document Number: D785_9	REV: C
Date: March 6, 1997	Sheet 9 of 11	

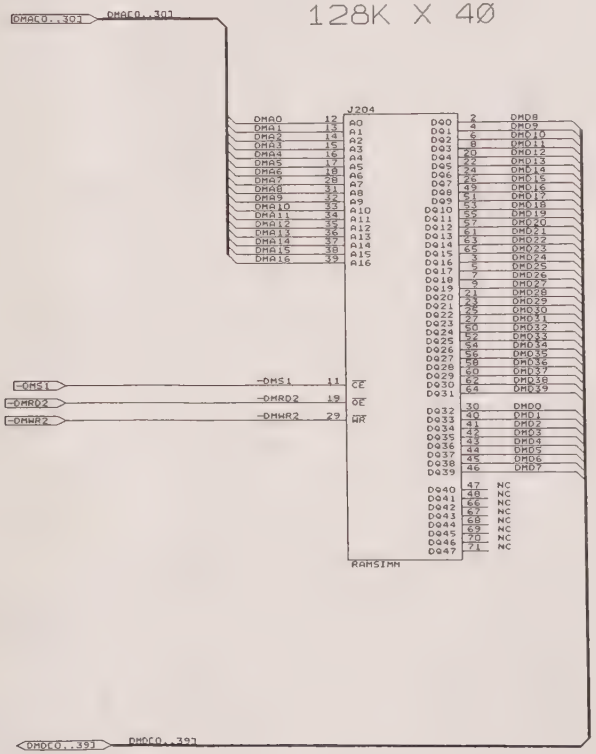

D785.C
TACH INPUT
VCC +5V
TACH_IN0
TACH_GND
+/-20VPK
T611 1:1-1
R620 80.0K
-4V/+4V
-20V/+20V
R621 20.0K
4V/20V K614A HS-211
TTL/ANALOG K615A HS-211
R626 270
C621 100P
R627 10K
R628 1.0M
R622 1.00K
R670 1.0M
D605 1N5230
D606 1N5230 4.7V
U604A OPA2604
U612B 74HC86
R645 787
TACH_TTL
N602C 1KX5I
N602B 1KX5I
N602D 1KX5I
U605A LT1016
+/- 2.5V
TACH_ANA
TACH_LVL
N602E 1KX5I
+5V_TD
D608 1N4148
U604B OPA2604
R624 10K
D607 1N4148
U612A 74HC86
R679 2.0K
C624 33P
R625 2.0K
C623 33P
N602A 1KX5I
R623 100K
-RISE/FTAC
TACH_IN1
R629 1.00K
C622 470P
U612C 74HC86
TACH_INP
VCC
U614A 74HC107
U615C 74HC04
TACH_INP
TACH_HOLD
U613C UPD71054
1.024MHZ
U615A 74HC04
TACH_IN2
U613A UPD71054
-TACH/N
U616 GAL16V8-20
-TTL/ATAC
-BY1/BYN
-NOH/HOLD
TACH_IN
C629 100P
R647 10K
R646 270
+/-5VPK
T612 1:1-1
R648 1.0M
U602D 74HC86
R649 1.78K
C628 470P
U612D 74HC86
STRT_IN0
STRT_GND
START_IN
-RISE/FSTA
DMAC0..30
DMDF0..39
U613D UPD71054
DMA25
DMA26
-CNTR_CS
-DMRQ1
-DMWR1
DMD24
DMD25
DMD26
DMD27
DMD28
DMD29
DMD30
DMD31
+15V
U604C OPA2604
C656 .15U-T
C657 .15U-T
-15V
U614B 74HC107
U605B LT1016
C652 .15U-T
C653 .15U-T
-5V_TD
U613B UPD71054
K615B HS-211
K614B HS-211
U615E 74HC04
U615F 74HC04
U615D 74HC04
STANFORD RESEARCH SYSTEMS
1290-D Reamwood Ave.
Sunnyvale, CA 94089
(408) 744-9040
Title
SR785 TACH INPUT
Size C
Document Number D785_10
REV C
Date: April 15, 1997 Sheet 10 of 11

+5V VCC

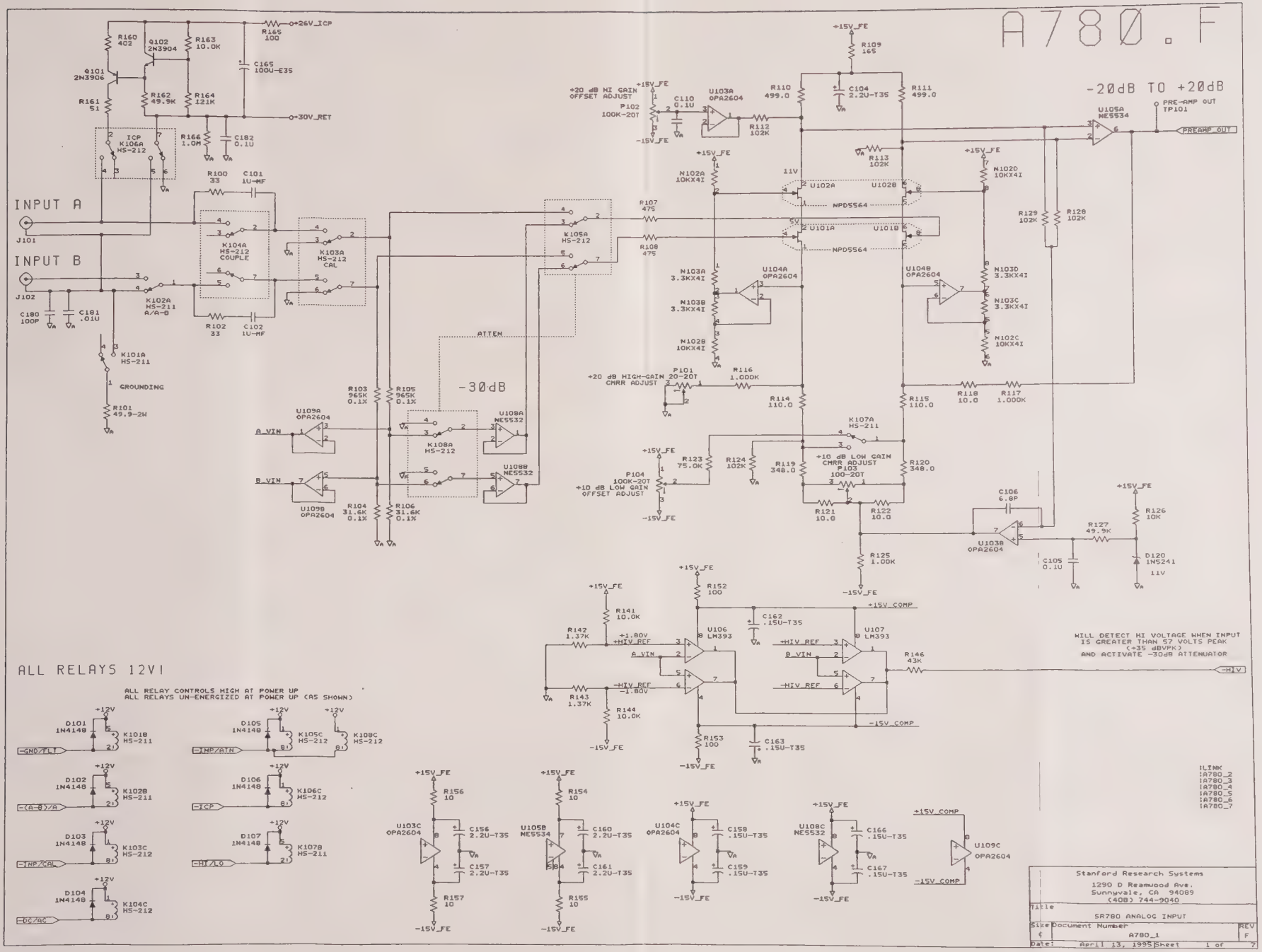
PROGRAM MEMORY 2
128K X 48

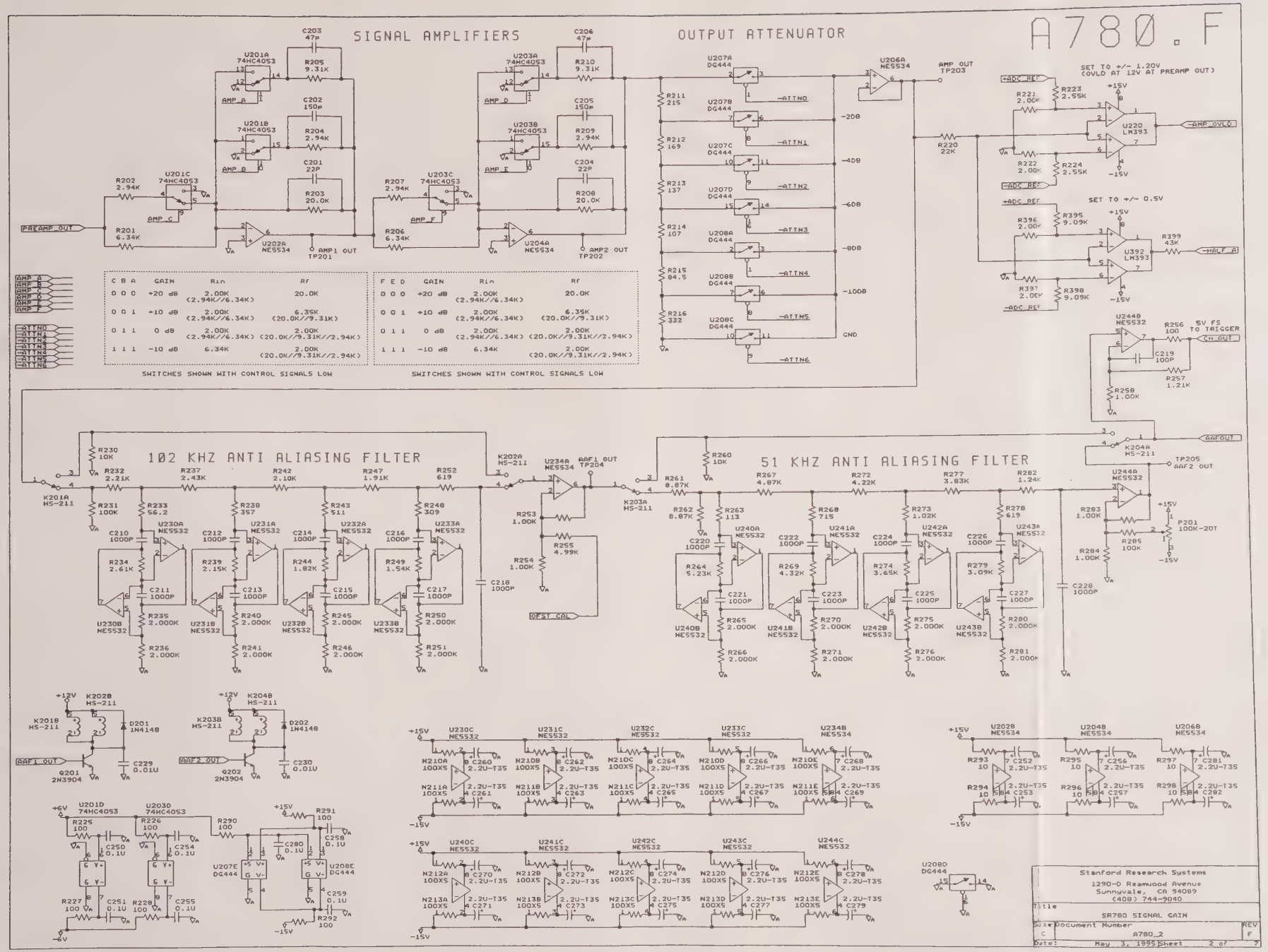


DATA MEMORY 2
128K X 40

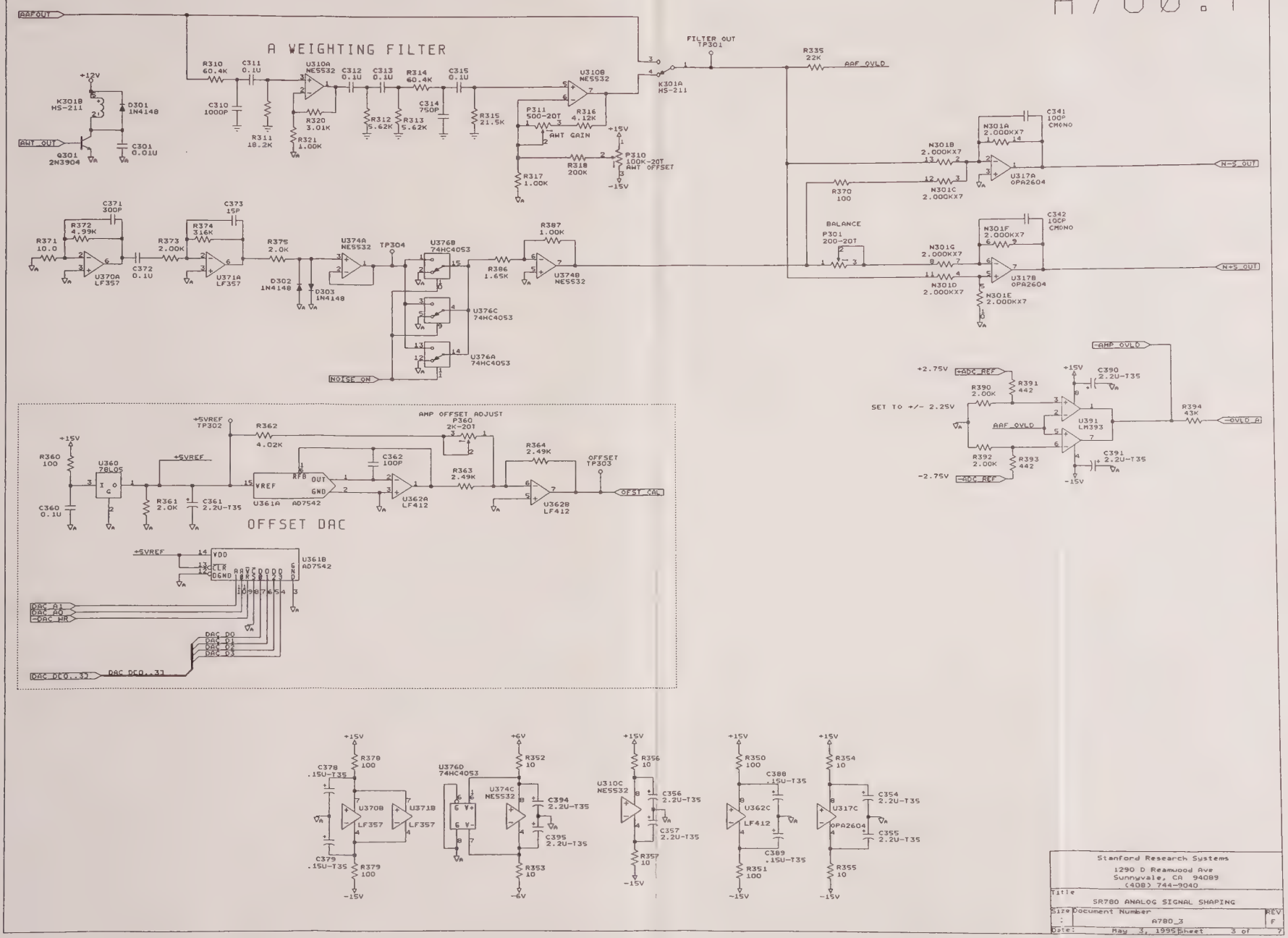


STANFORD RESEARCH SYSTEMS		
1290-D Reamwood Ave. Sunnyvale, CA 94089 (408) 744-9040		
Title: SR785 FAST MEMORY 2		
Size: C	Document Number: D785_11	REV: C
Date: April 15, 1997	Sheet 11 of 11	


A780.F
-20dB TO +20dB
INPUT A
INPUT B
J101
J102
PREAMP OUT
TP101
PREAMP OUT
ATTEN
-30dB
GROUNDING
+20 dB HI GAIN OFFSET ADJUST
+20 dB HIGH-GAIN CMRR ADJUST
+10 dB LOW GAIN OFFSET ADJUST
+10 dB LOW GAIN CMRR ADJUST
A_VIN
B_VIN
+26V_ICP
+30V_RET
+15V_FE
-15V_FE
+15V_COMP
-15V_COMP
-HIV
ALL RELAYS 12V!
ALL RELAY CONTROLS HIGH AT POWER UP
ALL RELAYS UN-ENERGIZED AT POWER UP (AS SHOWN)
WILL DETECT HI VOLTAGE WHEN INPUT IS GREATER THAN 57 VOLTS PEAK (+35 dBVPK) AND ACTIVATE -30dB ATTENUATOR
Stanford Research Systems
1290 D Reamwood Ave.
Sunnyvale, CA 94089
(408) 744-9040
SR780 ANALOG INPUT
Document Number A780_1
REV F
Date: April 13, 1995 Sheet 1 of 7

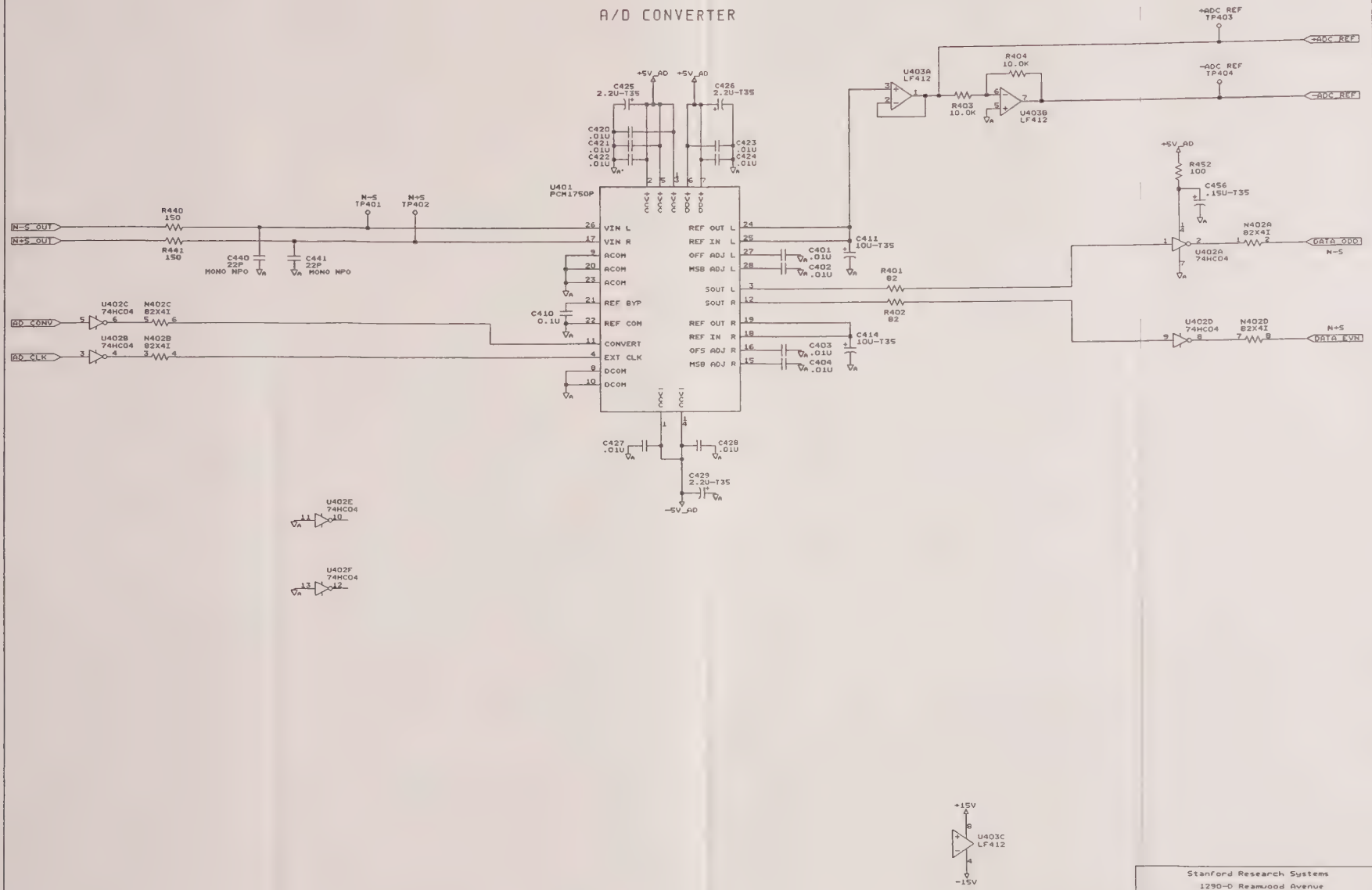

A780.F
SIGNAL AMPLIFIERS
OUTPUT ATTENUATOR
102 KHZ ANTI ALIASING FILTER
51 KHZ ANTI ALIASING FILTER
SR780 SIGNAL CAIN
Stanford Research Systems
1290-D Reamwood Avenue
Sunnyvale, CA 94089
(408) 744-9040
A780_2
May 3, 1995
2 of 2

A780.F


A WEIGHTING FILTER
AAFOUT
AWT OUT
FILTER OUT
TP301
AAF OVLD
AWT GAIN
AWT OFFSET
BALANCE
N+S OUT
N+S OUT
NOISE ON
AMP OFFSET ADJUST
OFFSET DAC
SET TO +/- 2.25V
-AMP OVLD
-OVLD A
OFST CAL
DAC A1
DAC A0
-DAC HR
DAC D0..3
DAC D0..3
Stanford Research Systems
1290 D Reamwood Ave
Sunnyvale, CA 94089
(408) 744-9040
SR780 ANALOG SIGNAL SHAPING
A780_3
May 3, 1995
3 of 7

A780.F

A/D CONVERTER



Stanford Research Systems		
1290-D Reamwood Avenue		
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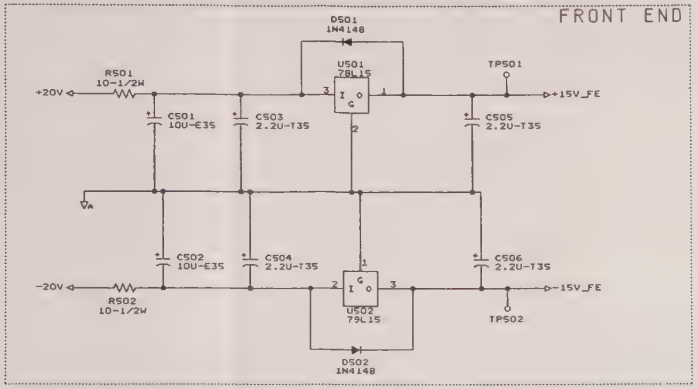
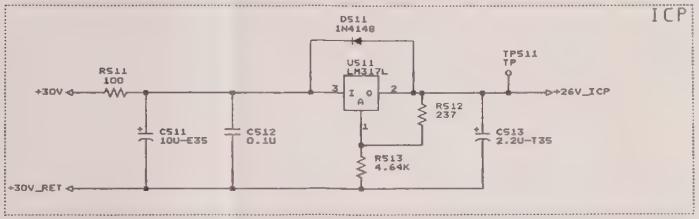
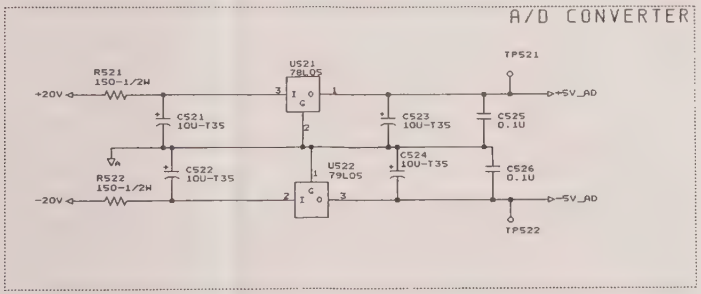
(408) 744-9040		
Title	SR780 A/D CONVERTER	
Size C	Document Number A780_4	REV F
Date: July 27, 1995	Sheet 4 of 7	

ANALOG POWER

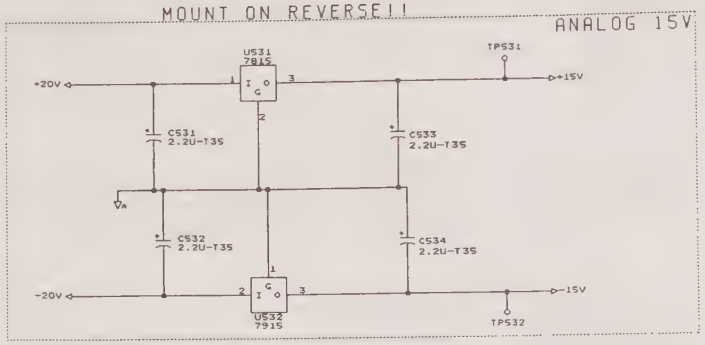
A780.F

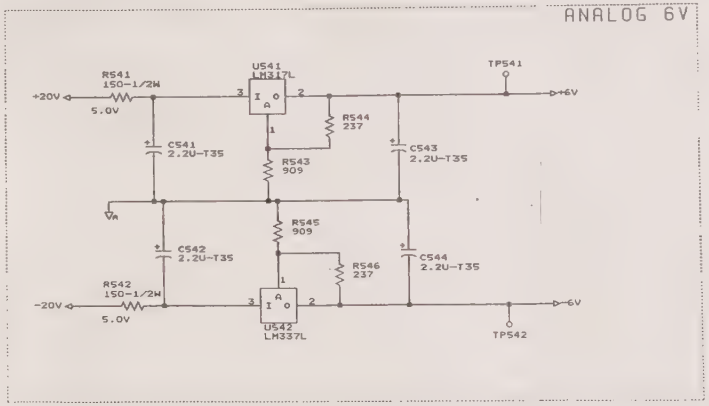


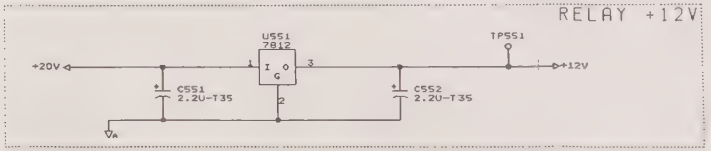




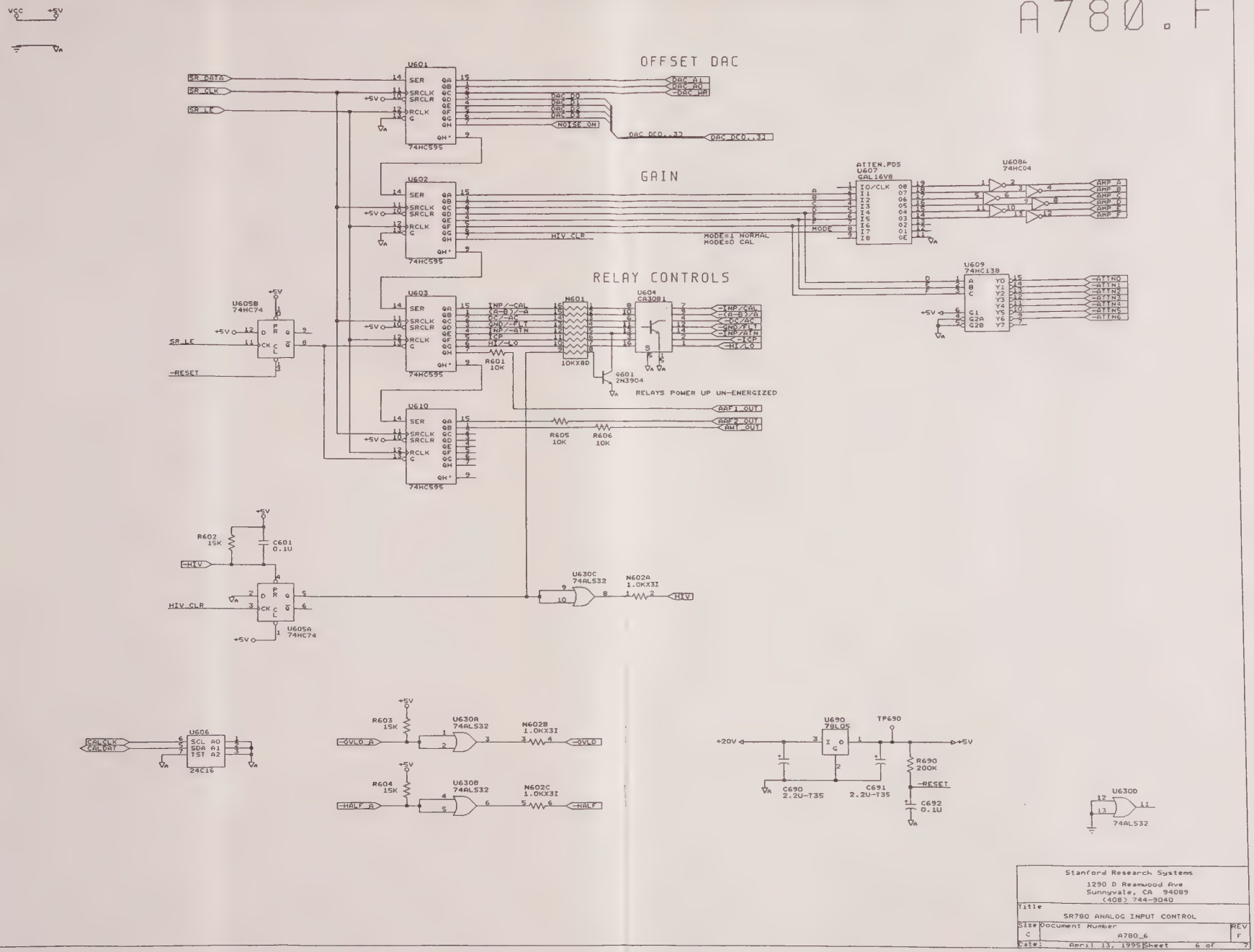
MOUNT ON REVERSE!!







Stanford Research Systems 1290-D Reamwood Avenue Sunnyvale, CA 94089 (408) 744-9040		
Title: SR780 ANALOG REGULATORS		
Size: C	Document Number: A780_S	REV: F
Date: April 13, 1995	Sheet 5 of 7	

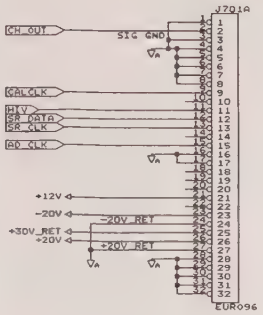


Stanford Research Systems	
1290 D Reamwood Ave Sunnyvale, CA 94089 (408) 744-9040	
Title	SR780 ANALOG INPUT CONTROL
Size: C	Document Number: A780_6 — REV: F
Date: April 13, 1995	Sheet 6 of 7

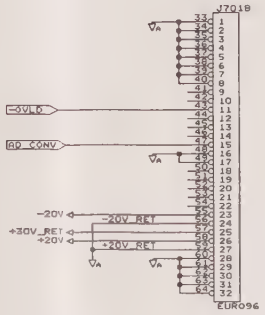
A780.F

FRONT

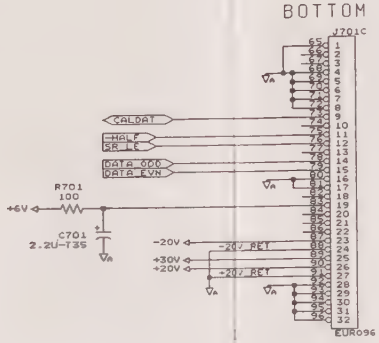
TOP



MIDDLE



BOTTOM



REAR

Stanford Research Systems 1290 D Reamwood Ave Sunnyvale, CA 94089 (408) 744-9040		
Title: SR780 ANALOG INTERCONNECT		
Size: C	Document Number: A780_7	REV: F
Date: April 13, 1995	Sheet 7 of 7	

M780.E

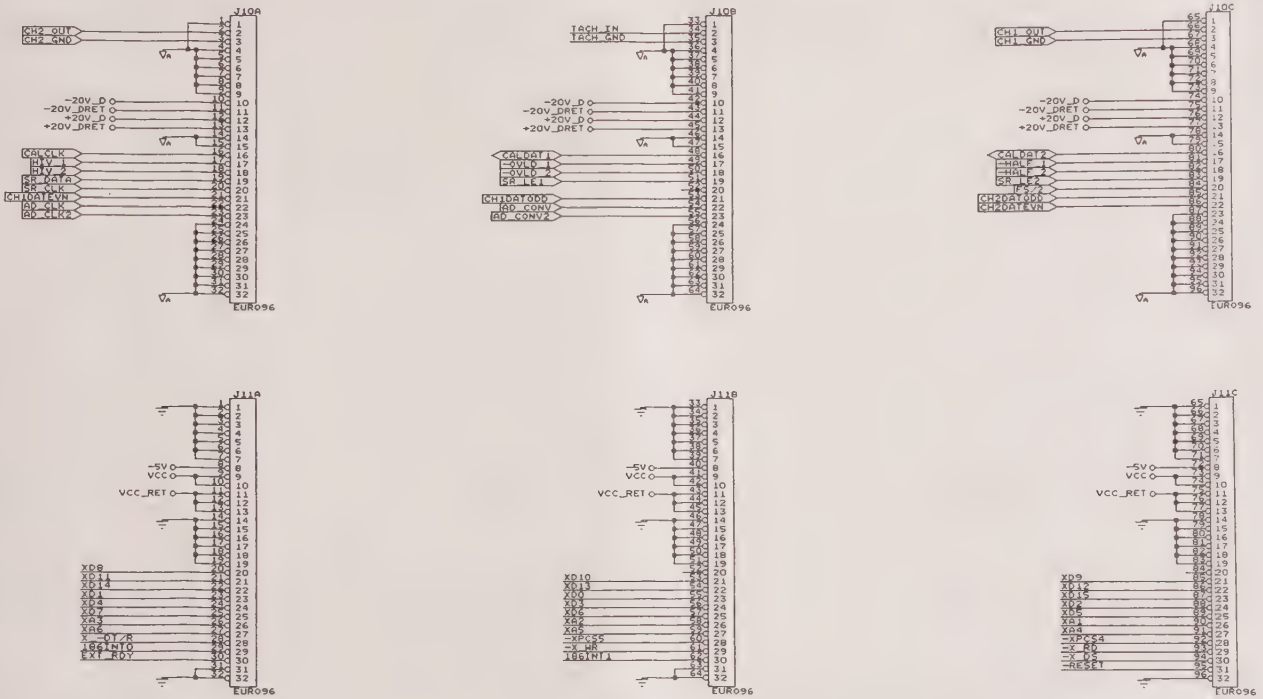
DSP SLOT

FRONT

TOP

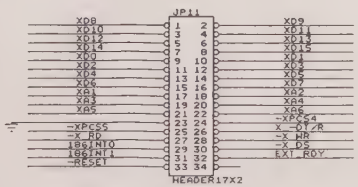
MIDDLE

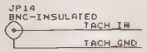
BOTTOM



REAR

CPU CONNECTOR





!LINK
!M780_2
!M780_3
!M780_4

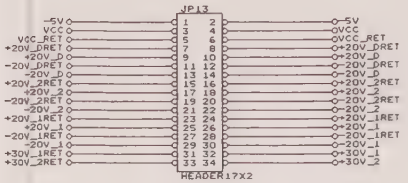
STANFORD RESEARCH SYSTEMS
1290-D Reamwood Ave.
Sunnyvale, CA 94089
(408) 744-9040

Title: SR780 DSP SLOT

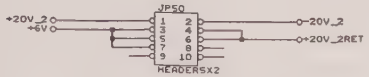
Size: C | Document Number: M780_1 | REV: E

Date: April 14, 1995 | Sheet 1 of 4

POWER CONNECTOR



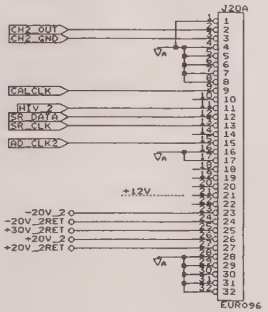
PREAMP CONNECTOR



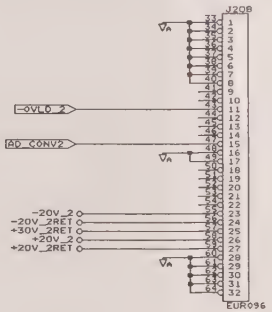
CHN 2 AMPLIFIER SLOT

FRONT

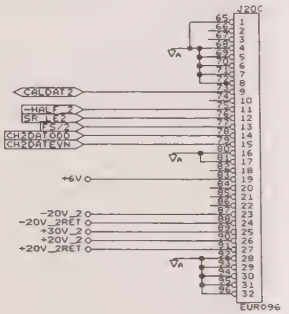
TOP



MIDDLE



BOTTOM



REAR

20V_2RET CONNECT TO CHANNEL 2 GROUND
RETURNS CONNECT DIRECTLY TO 20V REGULATOR GROUNDS

STANFORD RESEARCH SYSTEMS
1290-D Reamwood Ave.
Sunnyvale, CA 94089
(408) 744-9040

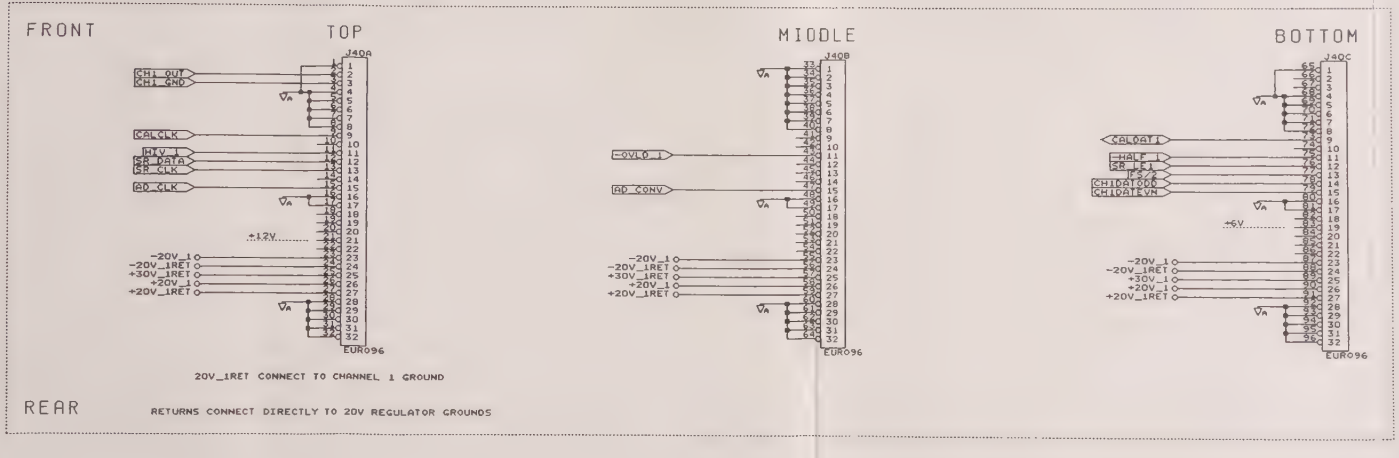
Title: SR780 CH2 AMPLIFIER SLOT

Size: C | Document Number: M780_2 | REV: E

Date: April 14, 1995 | Sheet 2 of 4

A780 BOARD
WHEN PLUGGED IN THIS SLOT, WILL APPEAR AS CHANNEL 1

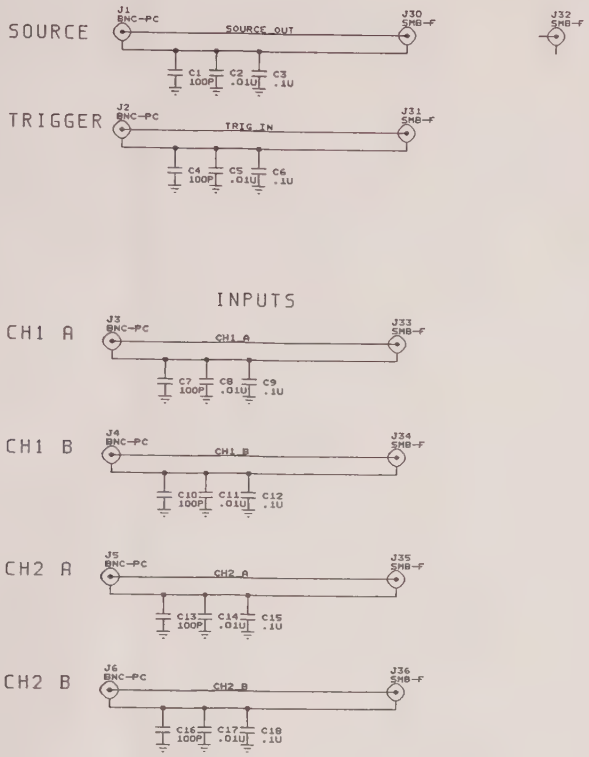
CHN 1 AMPLIFIER SLOT



STANFORD RESEARCH SYSTEMS
1290-D Reamwood Ave.
Sunnyvale, CA 94089
(408) 744-9040

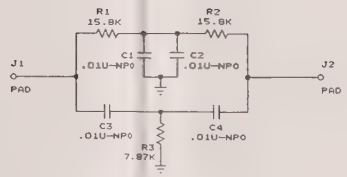
Title	SR780 CH1 AMPLIFIER SLOT	
Size C	Document Number M780_3	REV E
Date: April 14, 1995	Sheet 3 of 4	

M780.E



STANFORD RESEARCH SYSTEMS
1290-D Reamwood Ave.
Sunnyvale, CA 94089
(408) 744-9040

Title	SR780 INPUT BOARD	
Size C	Document Number M780_4	REV E
Date: April 14, 1995	Sheet 4 of 4	



1 KHZ NOTCH FILTER

Stanford Research Systems
1290 D Reamwood Ave
Sunnyvale, CA 94089
(408) 744-9047

Title: SR780 DEMO NOTCH FILTER

Size: C | Document Number: F780-1 | REV: A

Date: December 12, 1994 | Sheet 1 of 1

Specifications apply after 30 minutes warm-up and within two hours of last auto-offset. Measured with 400-line resolution and anti-alias filters enabled unless stated otherwise.

Measurement Groups

Groups	FFT, Correlation, Time Histogram, Swept-Sine, Order Tracking

Frequency

Range	102.4 kHz or 100 kHz (both displays have the same range)
FFT spans	195.3 mHz to 102.4 kHz or 191 mHz to 100 kHz. The two displays can have different spans and start frequencies.
FFT resolution	100, 200, 400 or 800 lines
Real-time bandwidth	102.4 kHz (highest FFT span with continuous data acquisition and averaging)
Accuracy	25 ppm from 20 °C to 40 °C

Dynamic Range

Dynamic range	90 dB typical, 80 dB guaranteed (FFT and Octave). 145 dB typical (Swept-Sine). Includes spurs, harmonics, intermodulation distortion and alias products. Excludes alias responses at extremes of span.
Harmonic distortion	< –80 dB (single tone in band)
Intermod. distortion	< –80 dB (two tones in band, each less than –6.02 dBfs)
Spurious	< –80 dBfs
Alias responses	< –80 dBfs (single tone outside of span, <0 dBfs, less than 1 MHz)
Full-span FFT noise floor	–100 dBfs typical (input grounded, > –30 dBV, Hanning window, 64 rms averages)
Residual DC response	< –30 dBfs (FFT with Auto-Cal on)

Amplitude Accuracy

Single channel	±0.2 dB (excluding window effects)
Cross channel	±0.05 dB, DC to 102.4 kHz (frequency response measurement, both inputs on the same range, rms averaged)

Phase Accuracy

Single channel	±3.0 deg. relative to external TTL trigger (–50 dBfs to 0 dBfs, freq. <10.24 kHz, center of frequency bin, DC coupled). For Blackman-Harris, Hanning, Flat-Top and Kaiser windows, phase is relative to a cosine wave at center of time record. For Uniform, Force and Exponential windows, phase is relative to a cosine wave at beginning of the time record.
Cross channel	±0.5 deg. (DC to 51.2 kHz) ±1.0 deg. (DC to 102.4 kHz) (frequency response meas., both inputs on same range, vector avg.)

Signal Inputs

Number of inputs	2
Full-scale input range	–50 dBV (3.16 mVp) to +34 dBV (50 Vp) in 2 dB steps
Maximum input level	57 Vp
Input configuration	Single-ended (A), differential (A–B)
Input impedance	1 MΩ + 50 pF
Shield to chassis	Floating mode: 1 MΩ + 0.01 µF Grounded mode: 50 Ω Shields grounded in (A–B) mode
Max. shield voltage	4 Vp
AC coupling	0.16 Hz cutoff frequency
CMRR	90 dB at 1 kHz (input range <0 dBV) 80 dB at 1 kHz (input range <10 dBV) 50 dB at 1 kHz (input range ≥10 dBV)
ICP signal conditioning	Current source: 4.8 mA Open circuit voltage: +26 V
A-weight filter	Type 0 tolerance, ANSI standard S1.4-1983; 10 Hz to 25.6 kHz
Crosstalk	< –145 dB below signal (input to input and source to inputs, 50 Ω receiving input source impedance)
Input noise	<10 nVrms/√Hz above 200 Hz (< –160 dBVrms/√Hz)

Trigger Input

Modes	Free Run, Internal, External, or External TTL
Internal	Level adjustable to ±100 % of input scale, positive or negative slope. Min. trigger level: 5 % of input range
External	Level adjustable to ±5 V in 40 mV steps, positive or negative slope. Input impedance: 1 MΩ Max. input: ±5 V Min. trigger level: 100 mV
External TTL	Requires TTL level to trigger (low <0.7 V, high >3.0 V)
Post-trigger	Measurement record is delayed up to 100,000 samples after the trigger.
Pre-trigger	Measurement record starts up to 8000 samples prior to the trigger.

Tachometer Input

Pulses per revolution	1 to 2048
RPM accuracy	±50 ppm (typ.)
Tach level range	±25 V, ±5 V, TTL
Tach level resolution	20 mV @ ±25 V, 4 mV @ ±5 V
Max. tach input level	±40 Vp

Min. tach pulse width	100 ns
Max. tach pulse rate	750 kHz

Transient Capture

Mode	Continuous data recording
Maximum rate	262,144 samples/s for both inputs
Maximum capture length	2 Msamples (single input) 8 Msamples with optional memory

Octave Analysis

Standards	Conforms to ANSI std. S1.11-1986 Order 3 Type 1-D and IEC 225-1966
Frequency range	(Band centers) *Single channel* 1/1 Octave 0.125 Hz to 32 kHz 1/3 Octave 0.100 Hz to 40 kHz 1/12 Octave 0.091 Hz to 12.3 kHz *Two channels* 1/1 Octave 0.125 Hz to 16 kHz 1/3 Octave 0.100 Hz to 20 kHz 1/12 Octave 0.091 Hz to 6.17 kHz
Accuracy	<0.2 dB (1 second stable average, single tone at band center)
Dynamic range	80 dB (1/3 Octave, 2 second stable average) per ANSI S1.11-1986
Sound level	Impulse, Peak, Fast, Slow and L_{eq} per ANSI S1.4-1983 Type 0 and IEC 651-1979 Type 0

Order Tracking

Delta order	0.0075 to 1
Resolution	up to 400 lines
Amplitude accuracy	±1 dB (typ.)
Displays	Order map (mag. and phase), order track (mag. and phase), orbit

Curve Fit and Synthesis

Type	20 poles/20 zeros curve fit (non-iterative rational fraction)
Order selection	Auto or manual
Output format	Pole-zero, polynomial, pole-residue

Source Output

Amplitude range	0.1 mVp to 5 Vp
Amplitude resolution	0.1 mVp
DC offset	<10.0 mV (typ.)
Offset adjust	±5 VDC (sine, swept-sine, two-tone)
Output impedance	<5 Ω, ±100 mA peak output current

Sine Source

Amplitude accuracy	±1 % of setting, 0 Hz to 102.4 kHz 0.1 Vp to 5 Vp into Hi-Z load
Harmonics, sub-harm. & spurious signals	0.1 Vp to 5 Vp < –80 dBc (fundamental <30 kHz) < –75 dBc (fundamental <102 kHz)

Two-Tone Source

Amplitude accuracy	±1 % of setting, 0 Hz to 102.4 kHz, 0.1 Vp to 5 Vp into Hi-Z load
Harmonics, sub-harm.	< –80 dBc, 0.1 Vp to 2.5 Vp

White Noise Source

Time Record	Continuous or burst
Bandwidth	DC to 102.4 kHz or limited to span
Flatness	<0.25 dBpp (typ.), 5000 rms averages (<1.0 dBpp (max.))

Pink Noise Source

Bandwidth	DC to 102.4 kHz
Flatness	<2.0 dBpp, 20 Hz to 20 kHz (measured using averaged 1/3 oct. analysis)

Chirp Source

Time record	Continuous or Burst
Output	Sine sweep across the FFT span
Flatness	±0.25 dB (1.0 Vp)

Swept-Sine Source

Auto functions	Source level, input range and frequency resolution
Dynamic range	145 dB

Arbitrary Source

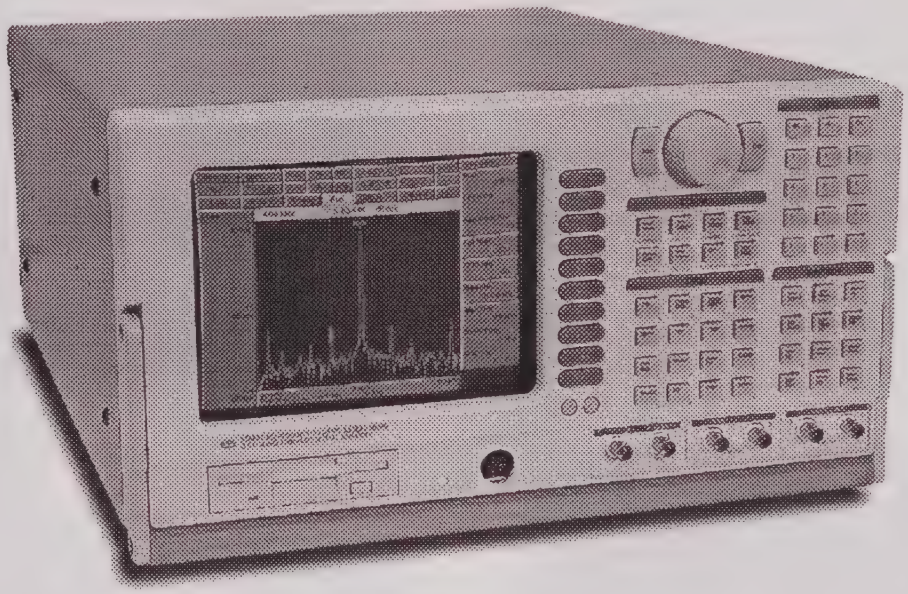
Amplitude range	±5 V
Record length	2 Msamples (playback from arbitrary waveform memory or capture buffer). Variable output sample rate.

General

CRT Monitor	Monochrome, 800H by 600V res.
Interfaces	IEEE-488.2, RS-232 and printer interfaces standard. All instrument functions can be controlled through computer interfaces. A PC (XT) keyboard input is provided for additional flexibility.
Hardcopy	Print to dot matrix and PCL compatible printers. Plot to HP-GL or postscript plotters. Print/plot to RS-232 or IEEE-488.2 interfaces or disk file. Additional file formats include GIF, PCX and EPS.
Disk	3.5" DOS format, 1.44 Mbytes
Preamp power	Power connector for SRS preamps.
Power	70 W, 100/120/220/240 VAC, 50/60 Hz
Dimensions	17" × 8.25" × 24" (WHD)
Weight	56 lbs.
Warranty	One year parts and labor on defects in materials and workmanship

FFT Spectrum Analyzers

SR785 — 100 kHz, 2-channel dynamic signal analyzer



- **DC to 102.4 kHz bandwidth**
- **90 dB dynamic range**
- **Low-distortion synthesized source**
- **145 dB dynamic range in swept-sine mode**
- **Order tracking**
- **20 pole/zero curve fitting**
- **Real-time octave analysis**
- **Up to 32 Mbyte memory**
- **GIF, EPS, PCX, HP-GL graphics output**
- **GPIB and RS-232 interfaces**

- **SR785 ... $11,950** *(U.S. list)*

SR785 Dynamic Signal Analyzer

The SR785 Two Channel Dynamic Signal Analyzer is a precision, full-featured signal analyzer that offers state-of-the-art performance and a wide selection of features at a price that's less than half that of competitive analyzers. Building on its predecessor, the SR780, the SR785 incorporates new firmware and hardware that make it the ideal instrument for analyzing both mechanical and electrical systems. For measurements involving servo systems, control systems, acoustics, vibration testing, modal analysis or machinery diagnostics, the SR785 has the features and specifications to get the job done.

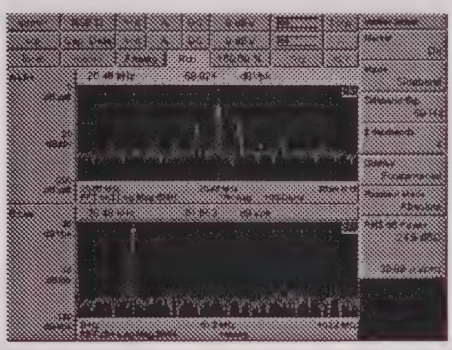
Standard measurement groups include FFT, order tracking, octave, swept-sine, correlation, time capture and time/histogram. The SR785 brings the power of several instruments to your application: a spectrum analyzer, network analyzer, vibration analyzer, octave analyzer and oscilloscope.

A unique measurement architecture allows the SR785 to function as a typical dual-channel analyzer with measurements like cross spectrum, frequency response, coherence, etc. Alternatively, the instrument can be configured so that each input channel functions as a single-channel analyzer with its own span, center frequency, resolution and averaging. This allows you to view a wide band spectrum and simultaneously zoom in on spectral details. The same advanced architecture provides storage of all measurement building blocks and averaging modes. Vector averaged, rms averaged, unaveraged and peak hold versions of all

SRS Stanford Research Systems

phone: (408)744-9040
www.thinkSRS.com

measurements are simultaneously acquired and can be displayed without re-taking data.



Narrow band FFT (top), wide band FFT (bottom)

Averaging

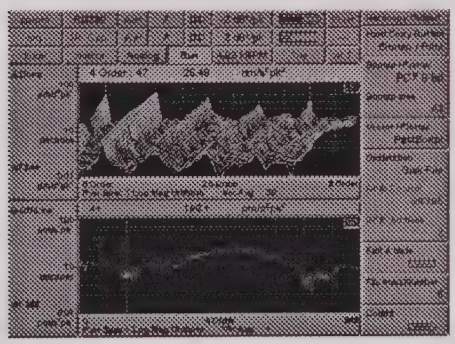
The SR785 comes equipped with a wide selection of averaging techniques to improve your signal-to-noise ratio. Choose rms averaging to reduce signal fluctuations, vector averaging to actually eliminate noise from synchronous signals, or peak hold averaging. In the order tracking measurement group, time averaging is available. Both linear and exponential averaging are provided for each mode.

Because the SR785 is so fast, there's no need for a separate "fast averaging" mode. For instance, in a full-span FFT measurement with a 4 ms time record, 1000 averages take exactly 4 seconds, during which the SR785 still operates at its maximum display rate.

For impact testing, the average preview feature allows each time record or spectrum to be accepted or rejected before adding it to the measurement.

Order Tracking

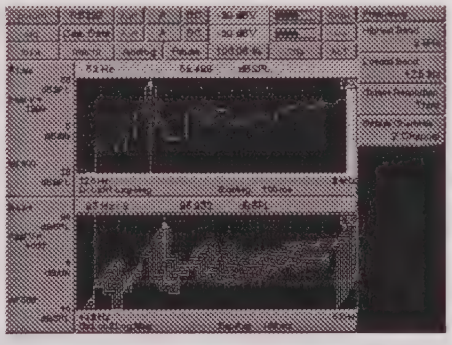
Order tracking is used to evaluate the behavior of rotating machinery. Measurement data is displayed as a function of multiples of the shaft frequency (orders), rather than absolute frequency. Combined with a waterfall plot, the SR785 provides a complete history or "order map" of your data as a function of time or rpm. Using the slice feature, the amplitude profile of specific orders in the map can be analyzed.



Order map (top), tracked order (bottom)

In tracked order mode, the intensity of individual orders vs. rpm is measured. Unlike other analyzers, there's no need to track a limited number of orders to ensure full speed measurements. The SR785's speed allows simultaneous tracking of up to 400 orders.

Run-up and run-down measurements are available in both polar and magnitude/phase formats. RPM profiling is provided to monitor variations of rpm as a function of time. A complete selection of time and rpm triggering modes is included allowing you to make virtually any rotating machinery measurement.



Octave analysis

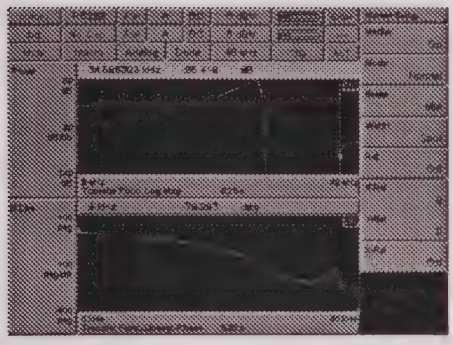
Octave Analysis

Real-time 1/1, 1/3 and 1/12 octave analysis, at frequencies up to 40 kHz (single channel) or 20 kHz (dual channel), is a standard feature of the SR785. Octave analysis is fully compliant with ANSI S1.11-1986 (Order 3, type 1-D) and IEC 225-1966. Switchable analog A-weighting filters as well as A, B and C weighting math functions are included. Averaging choices include exponential time averaging, linear time averaging, peak hold and equal confidence averaging. Broadband sound level is measured and displayed as the last band in the octave graph. Total power, impulse, peak hold and L_{eq} are all available. Exponentially averaged sound power (L_{eq}) is calculated according to ANSI S1.4-1983, Type 0.

Octave displays can be plotted as waterfalls with a fast 4 ms storage interval. Once data is stored in the waterfall buffer, the SR785 can display centile exceedance statistics for each 1/1, 1/3 or 1/12 octave band as well as for L_{eq}.

Swept-Sine Measurements

Swept-sine mode is ideal for signal analysis that involves high dynamic range or wide frequency spans. Gain is optimized at



Swept-sine Bode plot of LPF response

each point in the measurement producing up to 145 dB of dynamic range. A frequency resolution of up to 2000 points is also provided. Auto-ranging can be used with source auto-leveling to maintain a constant input or output level at the device under test (to test response at a specific amplitude, for instance).

Auto-resolution ensures the fastest possible sweeps and adjusts the frequency steps in the scan based on the DUT's response. Phase and amplitude changes that exceed user-defined thresholds are measured with high frequency resolution, while small changes are measured using wider frequency steps between points. A choice of linear sweeps with high resolution, or logarithmic sweeps with up to eight decades of frequency range is provided.

Time/Histogram

Use the time/histogram measurement group to analyze time domain data. A histogram of the time data vs. signal amplitude is provided for accurate time domain signal characterization. Statistical analysis capabilities include both probability density function (PDF) and cumulative density function (CDF). The sample rate, number of samples and number of bins can all be adjusted.

Time Capture

The SR785 comes with 8 Mbytes of memory (32 Mbytes optional). Analog waveforms can be captured at sampling rates of 262 kHz or any binary sub-multiple, allowing you to optimize sampling rate and storage for any application. For example, 8 Msamples of memory will capture 32 seconds of time domain data at the maximum 262 kHz sample rate, or about 9 hours of data at a 256 Hz sample rate. Once captured, any portion of the signal can be played back in any of the SR785's measurement groups except swept-sine. The convenient Auto-Pan feature lets you display measurement results synchronously with the corresponding portion of the capture buffer to identify important features.

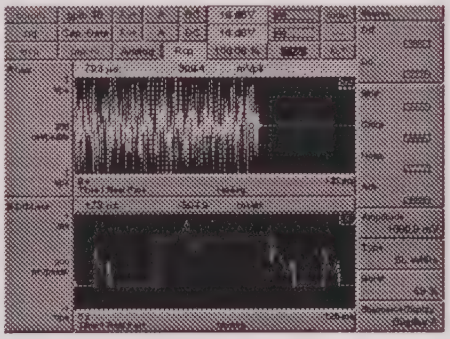
Unit Conversion

Automatic unit conversion makes translating transducer data easy. Enter your transducer conversion directly in V/EU, EU/V or dB (1V/EU). The SR785 will display the result in units of meters, inches, m/sec^2, in/sec^2, m/s, in/s, mil, g, kg, lbs., N, dynes, pascals or bars. Built-in ICP power means you don't need an external power supply for your accelerometer. Acoustic measurement results can be displayed in dBSPL, while electrical units include V, V^2, dBV and dBm.

Source

The SR785 comes standard with six precision source types. Generate low-distortion (-80 dBc) single or two-tone sine waves, white noise, pink noise, chirps, and arbitrary waveforms. The chirp and noise sources can be bursted to provide activity over a selected portion of the time record for FFT measurements, or to provide impulse noise for acoustic measurements. The digitally synthesized source produces output levels from 0.1 mV to 5 V plus DC offset from 0 to ±5 V, and delivers up to 100 mA of current.

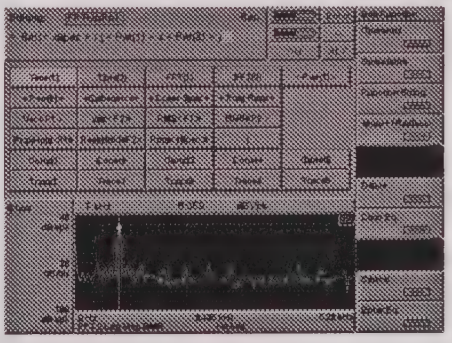
Arbitrary waveform capability is standard with the SR785. Use the arbitrary source to playback a section of a captured waveform, play a selected FFT time record or upload your own custom waveform from your computer.



Burst noise source (top), arbitrary waveform source (bottom)

User Math

Create your own measurement in each of the SR785's measurement groups using the math menu. Enter any equation involving rms averaged, vector averaged or unaveraged time



User Math

or frequency data, stored files, constants, or a rich array of supplied operations including arithmetic functions, FFT, inverse FFT, jω, d/dω, exp, ln x and many others. Because all the averaging modes are available as user math operands, non-repeatable runout measurements, for example, which are used in analyzing disk drives, can be performed in a single pass by entering the equation MAG(RMS<F1>)–MAG(VEC<F1>). Unlike many other analyzers, the SR785's measurement rate is virtually unaffected when user math is selected. For instance, the function exp(ln(conj(FFT2/FFT1))) can be calculated with a 100 kHz real-time bandwidth.

Waterfall

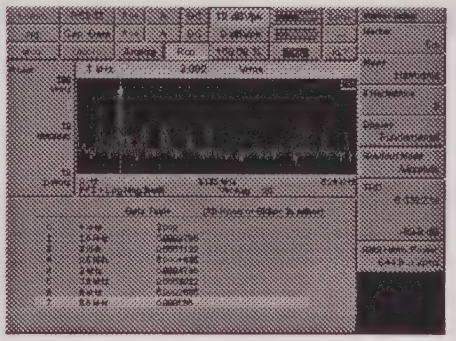
Waterfall plots are a convenient way of viewing a time history of your data. Each successive measurement record is plotted along the z-axis making it easy to see trends in the data. All FFT, octave and order tracking measurements can be stored in the SR785's waterfall buffer memory. You can choose to save all measurements and averaging modes or just the current measurement to conserve memory. Waterfall traces can be

Waterfall plot

stored every n time records for FFT and order tracking measurements. For order tracking measurements, new records can be acquired at a specific time interval or change in rpm. In octave measurements, the storage interval is in seconds (as fast as every 4 ms). While displaying waterfall plots, you can adjust the skew angle to reveal important features, or change the baseline threshold to eliminate low-level clutter. Any z-axis slice or x-axis record can be saved to disk or displayed separately for analysis.

Analysis

The SR785 includes a wide variety of analysis features. Marker analysis lets you measure the power contained in harmonics, sidebands or within a given band of frequencies. Important information such as THD, THD+N, sideband power relative to a carrier, or total integrated power are calculated in real time and displayed on the screen. The front/back display feature allows you to view live data from both signal inputs on one graph. You can also simultaneously display saved traces and live data. The peak-find marker allows you to quickly



Total harmonic distortion (THD)

locate frequency peaks with the click of a button. The marker statistics feature calculates the maximum, minimum, mean and standard deviation of data in any section of the display. For modal analysis, the cursor can be configured to display the resonant frequency and damping of a single selected mode.

Use data tables to display up to 100 selected data points in tabular format. Limit tables let you to define up to 100 upper and lower limit segments in each display for GO/NO-GO testing.

Curve Fit and Synthesis

The SR785 has a standard 20-pole, 20-zero curve fitter that can fit frequency domain data from both the FFT and swept-sine measurement groups. Curve models can be displayed in pole/zero, pole/residue and polynomial formats. Synthesis reverses the process: enter a model in any of the above formats and the SR785 synthesizes the required curve. The curve fit/synthesis menu allows you to change gain, delay and frequency scale, set pole and zero locations and instantly see the response of the modeled system.

Output

The SR785's 3.5" disk drive, computer interfaces (GPIB and RS-232) and printer port provide flexibility when saving, printing and exporting data. Data can be saved in binary or ASCII formats, and displays can be printed/plotted to any of the ports or the disk drive. Supported formats include PCL (LaserJet/DeskJet), dot-matrix, postscript, HP-GL, PCX or GIF. An annotation editor lets you add text, time, date and file names to any part of the plot.

Data Conversion Utilities

The SR785 contains a complete suite of data conversion utilities for both Windows and DOS operating systems. SR785 files can be converted to ASCII for use with spreadsheets, or Universal File Format (UFF) and HP SDF for use with modal analysis programs. SR785 Files can also be converted to MAT file format for use with MATLAB. Conversion from external file types is also supported. Both HP SDF and SR780 files can be converted to SR785 format.

Instrument Modes
FFT, Time/Histogram, Correlation, Octave, Swept-Sine, Order Tracking

Frequency Domain Measurements
Frequency Response, Linear Spectrum, Cross Spectrum, Power Spectrum, Coherence, Power Spectral Density

Time Domain Measurements
Time Record, Cross-Correlation, Auto-Correlation, Orbit

Amplitude Domain Measurements
Histogram, PDF, CDF

FFT Resolution
100, 200, 400, 800 lines

Views
Linear Magnitude, Log Magnitude, dB Magnitude, Magnitude Squared, Real Part, Imaginary Part, Phase, Unwrapped Phase, Nichols, Nyquist, Polar

Units
V, V^2, V^2/Hz, V/√Hz, meters, meters/s, meters/s^2, inches, inches/s, inches/s^2, mils, g, kg, lbs., N, dynes, pascals, bars, SPL, user-defined engineering units (EUs)

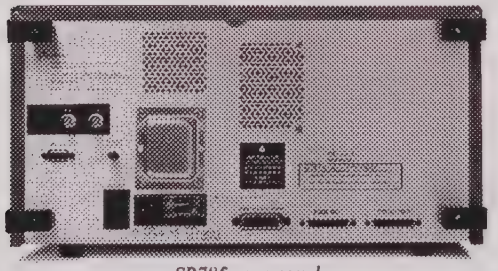
Displays
Single, Dual, Front/Back overlay, Waterfall with Skew, Zoom and Pan, Grid On/Off

Marker Functions
Trace Marker, Dual-Trace Linked Marker, Absolute and Relative Marker, Peak Find, Harmonic Marker, Band and Sideband Marker, Waterfall Marker, Frequency-Damping Marker

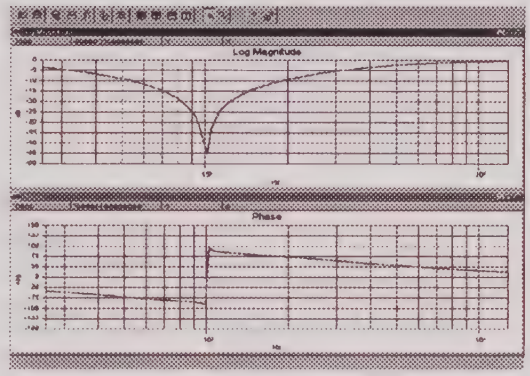
Windows
Hanning, Blackman-Harris, Flat-Top, Kaiser, Force/Exponential, User-Defined, ±T/2, ±T/4, T/2, Uniform

Source Outputs
Sine, Two-Tone, Swept-Sine, White/Pink Noise, Burst Noise, Chirp, Burst Chirp, and Arbitrary

Averaging
RMS, Vector, Peak Hold, Linear, Exponential, Equal Confidence (Octave), Preview Time Record, % Overlap Averaging, Overload Reject



SR785 rear panel



DataViewer software

DataViewer
Windows graphics program for viewing SR785 files. Graphs can be pasted to the clipboard or saved in PCX, BMP or GIF. You can perform simple editing, add pointers and text, change scaling, perform simple math operations, and copy measurement data into other applications.

Data Conversion Utility
Data, waterfall and capture files can be converted to ASCII. Data files can also be converted to Universal File Format, SDF format or MATLAB MAT-File Format. SDF and SR780 files can be converted to SR785 format.

Time Capture
Capture Time Data for later analysis (FFT or Octave). Up to 2 Msamples (8 Msamples optional) of data can be saved.

User Math
+, −, ×, /, Conjugate, Magnitude/Phase, Real/Imaginary, Sqrt, FFT, Inverse FFT, jω, Log, Exp, d/dx, Group Delay, A, B, C Weighting, x/x-1, Trace 1 to 4, Vector Average, RMS Average, Peak Hold

Analysis
Harmonic, Band, Sideband, THD, THD + N, Limit Test with Pass/Fail, Data Table, Exceedance, Statistics, Curve Fit/Synthesis

Triggering
Continuous, Internal, External (Analog or TTL), Source, Auto/Manual Arming, GPIB, RPM Step, Time Step, Pre/Post Trigger Delay

Ordering Information

SR785	Dynamic signal analyzer	$11,950
O780M1	8 Msample (32 Mbyte) memory	$800
O780RM	Rack mount kit	$85
CT100	SRS instrument cart	$850

Specifications apply after 30 minutes warm-up and within two hours of last auto-offset. Measured with 400-line resolution and anti-alias filters enabled unless stated otherwise.

Measurement Groups

Groups	FFT, Correlation, Time Histogram, Swept-Sine, Order Tracking

Frequency

Range	102.4 kHz or 100 kHz (both displays have the same range)
FFT spans	195.3 mHz to 102.4 kHz or 191 mHz to 100 kHz. The two displays can have different spans and start frequencies.
FFT resolution	100, 200, 400 or 800 lines
Real-time bandwidth	102.4 kHz (highest FFT span with continuous data acquisition and averaging)
Accuracy	25 ppm from 20 °C to 40 °C

Dynamic Range

Dynamic range	90 dB typical, 80 dB guaranteed (FFT and Octave). 145 dB typical (Swept-Sine). Includes spurs, harmonics, intermodulation distortion and alias products. Excludes alias responses at extremes of span.
Harmonic distortion	< −80 dB (single tone in band)
Intermod. distortion	< −80 dB (two tones in band, each less than −6.02 dBfs)
Spurious	< −80 dBfs
Alias responses	< −80 dBfs (single tone outside of span, <0 dBfs, less than 1 MHz)
Full-span FFT noise floor	−100 dBfs typical (input grounded, > −30 dBV, Hanning window, 64 rms averages)
Residual DC response	< −30 dBfs (FFT with Auto-Cal on)

Amplitude Accuracy

Single channel	±0.2 dB (excluding window effects)
Cross channel	±0.05 dB, DC to 102.4 kHz (frequency response measurement, both inputs on the same range, rms averaged)

Phase Accuracy

Single channel	±3.0 deg. relative to external TTL trigger (−50 dBfs to 0 dBfs, freq. <10.24 kHz, center of frequency bin, DC coupled). For Blackman-Harris, Hanning, Flat-Top and Kaiser windows, phase is relative to a cosine wave at center of time record. For Uniform, Force and Exponential windows, phase is relative to a cosine wave at beginning of the time record.
Cross channel	±0.5 deg. (DC to 51.2 kHz) ±1.0 deg. (DC to 102.4 kHz) (frequency response meas., both inputs on same range, vector avg.)

Signal Inputs

Number of inputs	2
Full-scale input range	−50 dBV (3.16 mVp) to +34 dBV (50 Vp) in 2 dB steps
Maximum input level	57 Vp
Input configuration	Single-ended (A), differential (A−B)
Input impedance	1 MΩ + 50 pF
Shield to chassis	Floating mode: 1 MΩ + 0.01 µF Grounded mode: 50 Ω Shields grounded in (A−B) mode
Max. shield voltage	4 Vp
AC coupling	0.16 Hz cutoff frequency
CMRR	90 dB at 1 kHz (input range <0 dBV) 80 dB at 1 kHz (input range <10 dBV) 50 dB at 1 kHz (input range ≥10 dBV)
ICP signal conditioning	Current source: 4.8 mA Open circuit voltage: +26 V
A-weight filter	Type 0 tolerance, ANSI standard S1.4-1983; 10 Hz to 25.6 kHz
Crosstalk	< −145 dB below signal (input to input and source to inputs, 50 Ω receiving input source impedance)
Input noise	<10 nVrms/√Hz above 200 Hz (< −160 dBVrms/√Hz)

Trigger Input

Modes	Free Run, Internal, External, or External TTL
Internal	Level adjustable to ±100 % of input scale, positive or negative slope. Min. trigger level: 5 % of input range
External	Level adjustable to ±5 V in 40 mV steps, positive or negative slope. Input impedance: 1 MΩ Max. input: ±5 V Min. trigger level: 100 mV
External TTL	Requires TTL level to trigger (low <0.7 V, high >3.0 V)
Post-trigger	Measurement record is delayed up to 100,000 samples after the trigger.
Pre-trigger	Measurement record starts up to 8000 samples prior to the trigger.

Tachometer Input

Pulses per revolution	1 to 2048
RPM accuracy	±50 ppm (typ.)
Tach level range	±25 V, ±5 V, TTL
Tach level resolution	20 mV @ ±25 V, 4 mV @ ±5 V
Max. tach input level	±40 Vp

Min. tach pulse width	100 ns
Max. tach pulse rate	750 kHz

Transient Capture

Mode	Continuous data recording
Maximum rate	262,144 samples/s for both inputs
Maximum capture length	2 Msamples (single input) 8 Msamples with optional memory

Octave Analysis

Standards	Conforms to ANSI std. S1.11-1986 Order 3 Type 1-D and IEC 225-1966
Frequency range	(Band centers) *Single channel* 1/1 Octave 0.125 Hz to 32 kHz 1/3 Octave 0.100 Hz to 40 kHz 1/12 Octave 0.091 Hz to 12.3 kHz *Two channels* 1/1 Octave 0.125 Hz to 16 kHz 1/3 Octave 0.100 Hz to 20 kHz 1/12 Octave 0.091 Hz to 6.17 kHz
Accuracy	<0.2 dB (1 second stable average, single tone at band center)
Dynamic range	80 dB (1/3 Octave, 2 second stable average) per ANSI S1.11-1986
Sound level	Impulse, Peak, Fast, Slow and L_{eq} per ANSI S1.4-1983 Type 0 and IEC 651-1979 Type 0

Order Tracking

Delta order	0.0075 to 1
Resolution	up to 400 lines
Amplitude accuracy	±1 dB (typ.)
Displays	Order map (mag. and phase), order track (mag. and phase), orbit

Curve Fit and Synthesis

Type	20 poles/20 zeros curve fit (non-iterative rational fraction)
Order selection	Auto or manual
Output format	Pole-zero, polynomial, pole-residue

Source Output

Amplitude range	0.1 mVp to 5 Vp
Amplitude resolution	0.1 mVp
DC offset	<10.0 mV (typ.)
Offset adjust	±5 VDC (sine, swept-sine, two-tone)
Output impedance	<5 Ω, ±100 mA peak output current

Sine Source

Amplitude accuracy	±1 % of setting, 0 Hz to 102.4 kHz 0.1 Vp to 5 Vp into Hi-Z load
Harmonics, sub-harm. & spurious signals	0.1 Vp to 5 Vp < –80 dBc (fundamental <30 kHz) < –75 dBc (fundamental <102 kHz)

Two-Tone Source

Amplitude accuracy	±1 % of setting, 0 Hz to 102.4 kHz, 0.1 Vp to 5 Vp into Hi-Z load
Harmonics, sub-harm.	< –80 dBc, 0.1 Vp to 2.5 Vp

White Noise Source

Time Record	Continuous or burst
Bandwidth	DC to 102.4 kHz or limited to span
Flatness	<0.25 dBpp (typ.), 5000 rms averages (<1.0 dBpp (max.))

Pink Noise Source

Bandwidth	DC to 102.4 kHz
Flatness	<2.0 dBpp, 20 Hz to 20 kHz (measured using averaged 1/3 oct. analysis)

Chirp Source

Time record	Continuous or Burst
Output	Sine sweep across the FFT span
Flatness	±0.25 dB (1.0 Vp)

Swept-Sine Source

Auto functions	Source level, input range and frequency resolution
Dynamic range	145 dB

Arbitrary Source

Amplitude range	±5 V
Record length	2 Msamples (playback from arbitrary waveform memory or capture buffer). Variable output sample rate.

General

CRT Monitor	Monochrome, 800H by 600V res.
Interfaces	IEEE-488.2, RS-232 and printer interfaces standard. All instrument functions can be controlled through computer interfaces. A PC (XT) keyboard input is provided for additional flexibility.
Hardcopy	Print to dot matrix and PCL compatible printers. Plot to HP-GL or postscript plotters. Print/plot to RS-232 or IEEE-488.2 interfaces or disk file. Additional file formats include GIF, PCX and EPS.
Disk	3.5" DOS format, 1.44 Mbytes
Preamp power	Power connector for SRS preamps.
Power	70 W, 100/120/220/240 VAC, 50/60 Hz
Dimensions	17" × 8.25" × 24" (WHD)
Weight	56 lbs.
Warranty	One year parts and labor on defects in materials and workmanship

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